Railway Age

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Table of Contents Appears on Page 5 of Advertising Section

Chicago and the Railroads

THE Chicago Tribune on December 6 published an editorial intimating that the railways have refused "to provide for Chicago facilities which they have provided in much less valuable terminals." The United States Supreme court having recently held in a Los Angeles case that the Interstate Commerce Commission is without the power to compel railroads to build a union station, the Chicago Tribune called upon the Illinois Commerce Commission to force the railroads of Chicago to join in building a station to replace the existing Illinois Central and Dearborn stations, and also, presumably, the Grand Central and LaSalle street stations. "It has been the wise policy of Chicago and Illinois not to interfere with private enterprise," said the Chicago Tribune, "but," it added, "inasmuch as these railroads are not disposed to give us the service to which we are entitled we will not invade the privileges of private capital by obtaining the improvements by political coercion."

Such statements call attention to the existence in Chicago of a situation such as does not exist anywhere else in the United States. Measured by the number of railroads serving it and the service they render to it, Chicago is the greatest railroad center in the world. It owes its remarkable growth and prosperity to the railroads more than to any other industry. It certainly is not true that the railroads have, in the past, discriminated against it in making improvements, fixing rates or rendering service. The railroads do not admit that they are now discriminating against Chicago as compared with other cities, but if they should do so might this not be due in large measure to attitudes of railway officials, business men, public officials and the public created by the policy of the Chicago press in dealing with railway matters?

Propaganda Against the Railways

Although Chicago is our greatest railroad center, there is no other community in which the railroads are treated as badly by the press as there. With one exception every newspaper in the city constantly carries on propaganda against them both by attacking them in editorials and by coloring and distorting what passes for "news." Occasionally a Chicago paper will publish an editorial or short news item disclosing that improvements in railway service and operating efficiency are being made; but for every inch of space they give to such material the Chicago newspapers publish scores of columns of propaganda intended to show that the railways are mistreating Chicago, that their management has the dry rot, and that the future welfare of the country depends upon the diversion of as much traffic as possible from the railways to other means of transportation, especially waterways.

The railways have made as remarkable an advance in increasing the safety of their operation during the last decade as any other American industry. There is no news in this for the Chicago press. The news is that people are being killed in grade crossing accidents, and that, therefore, the railways should spend many millions of dollars in eliminating grade crossings in Chicago, although they have spent more for that purpose in Chicago than in any other city, and although the increased hazards at grade crossings are due to the increased use of recklessly-driven motor vehicles.

Chicago is a soft-coal burning city, and therefore has a smoke nuisance. The railways make only a small fraction of the smoke, and the Illinois Central, which occupies Chicago's front yard, already has largely carried out one of the greatest electrification projects in the world. What the railways have done and are doing to reduce the smoke nuisance is, however, not news in Chicago. The news is that the railroads still make smoke, and therefore should all spend many millions of dollars upon the electrification of their Chicago terminals to reduce the smoke nuisance.

The Chicago & North Western has provided Chicago with one of the finest passenger stations used by a single railroad in the world, and only within recent years the lines using the Union station have built one of the greatest of modern passenger terminals. No other city in the world is served by so many luxurious passenger trains. The passenger earnings of the railroads of the country have declined more than $400,000,000 since 1920, and the railways serving Chicago have suffered their share of the loss. These things are not news in Chicago. The big news is that the railways are managed by men who are so short-sighted that they

will not immediately get together and spend additional hundreds of millions of dollars upon passenger terminals in Chicago to handle an unprofitable business. The fact that the railways would lose by doing so is disregarded. They should do whatever will benefit Chicago, regardless of the effects upon their net earnings and fixed charges. The railways recently have speeded up their passenger trains throughout the country more than in many years, but this is not news in Chicago. While they have been doing this they have received unprecedented abuse in Chicago for not speeding up their trains.

Waterways and Railways

The business interests of Chicago demand that the national government shall spend hundreds of millions of dollars to give Chicago water transportation via the St. Lawrence route to Europe and via the Mississippi valley to the Gulf of Mexico. All the arguments in favor of these projects are news that the Chicago press gladly prints; but none of the arguments against them are news that is fit to print. Not long ago Dr. H. G. Moulton, president of the Brookings Institution, an impartial authority upon railway and inland water transportation of international reputation, made an address before the Traffic Club of Chicago in which he contended that it would be as cheap to build three trunk line railroads from Chicago to the Atlantic Ocean as to construct the Great Lakes-St. Lawrence deep waterway, and that the three railroads would be able to handle 24 times as much traffic. His address was almost ignored by the Chicago newspapers. Soon afterwards the late Secretary of War James W. Good, who had no reputation whatever as a transportation expert, made an address advocating waterway development to "cheapen" transportation; and the Chicago press gave many columns of space to it. Not long since L. A. Downs, president of the Illinois Central, who surely has some reputation as a transportation expert, made an address before the Chicago Association of Commerce, the leading civic organization of the city, presenting arguments and data to show that inland water transportation cannot be made cheaper than rail transportation if the taxes paid by the public be included in the cost of water transportation. The Chicago press practically ignored Mr. Downs' address. Soon afterward Governor Emmerson of Illinois, who surely is not a transportation expert, made an address advocating waterways, and the Chicago press gave it a large amount of space.

Recently one of the Chicago newspapers published an article entitled "Future of Chicago Rests Upon the Waterways." If that claim is well-founded, why should the railways make large expenditures for enlarging and improving their facilities for serving Chicago? If it is not well-founded, why are the people of Chicago constantly told that it is? If the railways are going to lose a large part of their Chicago business, obviously they should reduce their expenditures for improvements in Chicago, and increase them where they can reasonably expect a continued increase in traffic.

Holding Up the Railways

The constant propaganda against the railways carried on in Chicago is having its inevitable effects. Chicago has come to regard the railways as its natural prey. Every railway that serves it serves numerous other communities, and has duties to them, but the demands of Chicago are so enormous that if they were all complied with, the railways would have wholly inadequate capital resources left with which to meet their obligations to other communities. They are seldom commended for what they do for Chicago; but they are generously abused for not doing more. Chicago having been educated to regard the railways as its natural prey, every improvement they try to make there becomes a pretext for holding them up. Public authorities and real estate men immediately swarm to the scene of any proposed improvement to get as much out of it for themselves as possible. In the Chicago district there are several local governments, including that of Chicago, of Cook county and of the Sanitary District. Because of the grossest incompetency and extravagance these local governments are all virtually or actually bankrupt, and in dire need of additional sources for taxes. Consequently, after the railways have made an improvement they are penalized for having made it by having it taxed to the limit of extortion.

The railroads constitute one of the greatest industries of Chicago. They employ about 80,000 people in the Chicago district, and therefore directly afford a means of livelihood to three or four hundred thousand persons. One of the largest branches of the manufacturing industry in the Chicago district is devoted to the making of equipment and supplies for railways, and the purchases made by the railways from Chicago manufacturers indirectly afford employment and livelihood to many more thousands of people. The employees of the railways and of concerns that manufacture for them therefore represent a large part of the purchasing power upon which Chicago concerns of all kinds depend for their business. The Chicago newspapers are great boosters for every other line of industrial, commercial and financial business in the Chicago district. The railroads alone are victimized by their policy of direct attack in editorials, and of indirect attack through the exaggeration of news that is unfavorable to them and the suppression of news that is favorable to them. Not only are the railroads the only Chicago industry against which constant propaganda is carried on, but as we have seen, when propaganda proves insufficient there is no hesitation about demanding from public authorities the application to them of forms of coercion which would be denounced as tyrannical and socialistic if an attempt were made to apply them to other industries.

Perhaps Chicago will be successful in its efforts to

encourage the railways to increase their expenditures for improvements in its territory by clubbing them with almost every form of misrepresentation and abuse, by holding them up in every possible way, and by promoting development of waterways to deprive them of traffic and earnings; but if it really thinks this is the best way to stimulate the development of its railroad industry, why does it not try the same methods as means of stimulating the development of its other industries?

Grade Crossing Elimination

FEW subjects involving the relations between the railroads and the public are more controversial than that of the division of the costs of grade crossing elimination. Much has been written and more has been said for the advancement of various theories for the allocation of the expense, but there can not be said to be any agreement on principles. Railway managements sometimes accept certain divisions, not because they are fair, but because it is expedient to do so. There has even been intimation, in some instances, that traffic considerations have been a factor in the acceptance of inequitable divisions.

In sharp contrast with the situation presented by the highway-railway crossing is that concerning the crossings of railways with each other. In the first place, hazard of accident is not a factor in the demand for a separation of crossings of railways with each other at grade, because failure to comply with protective measures or to observe protective signals occurs so rarely that there are relatively few collisions at such crossings. Therefore, the demand for the elimination of railway crossings arises only when the presence of the crossing creates a burdensome obstruction to traffic, and the benefits to be derived from elimination have a money value sufficient to justify the construction expense. Division of the cost is allocated on the basis of proportionate benefits.

Why should not this same method of approach be employed in dealing with crossings of railways and highways? Efforts to answer this question are confronted with the same obstacle that has impeded all attempts at a solution of the highway grade crossing problem. The fact that human life is involved seems to have led to the rather general conviction that no expense for the purpose of preventing accidents is too great, an attitude which ignores the fact that accidents at crossings of highways with railways account for less than one-tenth of all deaths resulting from the operation of highway vehicles.

Many accidents occur at the intersection of streets and highways; yet no one has suggested the separation of street grades for the purpose of eliminating this hazard. Projects for such highway grade separations are promoted solely on the plea for a freer flow of traffic. Likewise, wide highways are built, not because narrower roads cannot be used with safety, but because safe operation on the narrow road precludes the speed of travel now demanded by the vehicle owner. It is this increased speed of highway travel which must be held responsible in many cases for the failure of the driver to avert collisions with railway trains. To approach the subject of grade separation at the crossings of two highways, two railways, or a railway and a highway, from any other angle than that of the improvement to be effected in the flow of traffic will lead nowhere. But with a disposition to study the problem from the standpoint of potential benefit to transportation and to accept the principle of allocating costs on the basis of the benefits realized, it should be possible for representatives of the railways and the public to agree on methods of evaluating such benefits.

What Railways Are Earning

CONTRARY to the expectations raised by the results gained in the first half of 1929, the present year will not prove to be the best the railways have had since the war. The failure of freight business to show a normal seasonal increase is causing the net operating income earned in the last one-third of the year to be substantially less than was anticipated. Both the total earnings and the net operating income reported for the first ten months of the year included almost $30,500,000 of back mail pay which actually was earned in 1927 and 1928. Even excluding this back mail pay, the net operating income earned during these ten months was only at the annual rate of 5.19 per cent, as compared with 5.25 per cent in 1926, which was the best year the railways have had since the war. Exclusive of this back mail pay, the return earned in ten months was at the annual rate of only 5.05 per cent. In view of the present trend of earnings it seems probable that the return reported for the entire year will not exceed 5 per cent, and that, excluding the back mail pay, it will be considerably less than this.

The constant increase in taxes continues to be a factor of increasing importance in determining railway financial results. Including back mail pay, total earnings in the first ten months of the year were about $8,400,000 more than in 1926, while exclusive of back mail pay they were about $22,000,000 less. Taxes were about $21,000,000 greater than in 1926, while operating expenses were almost $100,000,000 less. This large reduction in operating expenses was rendered possible mainly by increased investment, which has enabled the railways to make savings in labor, fuel and materials; but, in spite of the economies in operation effected, they have been unable to earn as large a percentage of return upon investment as in 1926.

In the early part of the year there seemed reason for hoping that the railways finally would be able to earn the fair return assured them by the Transportation

Act. That hope is not being fulfilled. It will still be true at the end of 1929, that whether measured by property investment or the Interstate Commerce Commission's tentative valuation, they have never earned a fair return since the Transportation Act assured it to them. The Supreme court, in its decision in the O'Fallon case, by holding that cost of reproduction must be given weight in valuation, practically held that the railways are entitled to a fair return upon a much larger valuation than the Interstate Commerce Commission proposed to give them. So far as the railways are concerned, the Interstate Commerce Commission, aided by economic developments, is still more powerful than a decision of the Supreme court. And meantime, predictions made by critics of the Supreme court's decision as to the effects it would produce upon railway rates and earnings are falling very far short of fulfillment.

Arguments on the Accounting Cases

ORAL arguments in the cases involving proposed revision in the accounting classifications and in the provision for depreciation accounting were heard by the Interstate Commerce Commission on December 5 and 6. The points at issue have been the subject of hearings over a considerable period. The records are long. Both cases have cost the railroads and the government a considerable sum of money. It is to be hoped, therefore, that the commission will now be able to arrive at final decisions which will not only obviate further expense but will permit railroad accounting to establish itself on some basis of reasonable permanence.

Both cases are complex and in both of them widely varying points of view appeared. In the accounting revision case, the element of confusion was contributed by proponents of a plan of cost accounting. The railways, represented by the Railway Accounting Officers Association, endeavored to show that the plan presented would not achieve the results claimed for it and that routine accounting to provide a separation of costs as between different classes of service would be impracticable, unnecessary and very expensive. The tentative report by Commissioner Eastman did not find that the record justified the prescription of a definite cost accounting plan, but it did advocate that the subject be further studied by a special committee to be appointed by the commission. The railroads, while offering to co-operate with this committee if it were formed, maintained that the subject had been discussed for years without any practicable plan being advanced; hence to insist on further discussion would needlessly prolong the uncertainty regarding the future of railway accounting policy.

On accounting for depreciation differences of opinion between the railroads and the guiding theory of Commissioner Eastman's proposed report were even more profound. The railways contended that they are legally entitled to maintain from their earnings the physical integrity of their property; and that any plan of such maintenance would be inadequate if it would charge to operating expenses only their investment in dollars and cents as the property was worn out and replaced at greater cost. If the commission cannot agree with the railways' point of view, then it is urged to join in preparing a test case for the courts so that the legal issues may be settled.

One might well believe that the delay in the functioning of regulatory machinery is perhaps a greater handicap to regulated companies than any actual restrictive action of the authorities. Valuation, consolidation and accounting—in none of these matters has definitive and final action been taken which could in any way compare as an obstacle to progress with the languorous pace of these problems toward the goal of solution.

Smoking in Dining Cars

PERMITTING, or even inviting, passengers to smoke in dining cars seems to be a growing practice. Some non-smokers may find this development unpleasant and yet, on the other hand, if they do, certainly the railways may not be criticized for a policy similar to that of leading hotels and restaurants everywhere. There may be, from the railroad point of view, some objection to extending this permission, since it may cause passengers to linger longer in the dining car and thus reduce capacity.

It is not our purpose, however, to discuss either the merits or demerits of the policy. Rather, we should like only to suggest that the railroads make their policy, whatever it may be, more clearly known. If a railroad has decided to permit smoking in its dining cars, then it has undoubtedly done so in the belief that such action will make friends. If this is true, should it not then state its policy clearly on its menus so that all who might wish to enjoy the privilege may feel free to do so, giving the railroad the maximum good-will benefit? If, on the other hand, the railroad does not wish to have passengers smoke in its dining cars, should not that fact also be clearly stated on the menu?

Permission to smoke seems to be developing into a rather general practice and passengers may assume the privilege where it is not extended. To have an employee ask a passenger to refrain from doing what he had not unnaturally assumed he was privileged to do is likely to promote needless ill-feeling. Whether smoking is permitted or not, therefore, it would seem reasonable to avoid making the passengers guess as to what the railroad's policy is. It is a small matter, surely, but nevertheless a potential breeder of friction and ill-feeling the avoidance of which in dealing with the public is so important.

Eight-wheel Switcher Built for the Illinois Central by the Lima Locomotive Works, Inc.

Illinois Central Buys Eight-Wheel Switchers

Equipped with tenders designed to afford clear vision in back-up work—Tractive force is 51,041 lb.

FIFTEEN eight-wheel switchers, built by the Lima Locomotive Works, Inc., were recently placed in service by the Illinois Central at eight different terminals. Six of these locomotives are at Memphis, Tenn., two at Fulton, Ky., and Mattoon, Ill., respectively; and one each has been assigned to Jackson, Miss., McComb and Jackson, Tenn., Indianapolis, Ind., and Paducah, Ky. This power was purchased for facilitating the work of breaking-up long freight trains, and to replace a number of Mikado 2-8-2 type locomotives now used in transfer and switching service.

This order of switching locomotives is practically a repeat order of a number of switchers of similar design which were purchased in 1921, and to which were given the first of the road numbers in the 3500 series. These locomotives possess the same general characteristics of design as the U. S. R. A. eight-wheel switchers. They operate at the same boiler pressure, 175 lb., and also have the same diameter drivers, 51 in., and the

Principal Dimensions, Weights and Proportions of the Illinois Central Eight-Wheel Switchers

Railroad	Illinois Central
Builder	Lima Locomotive Works, Inc.
Type of locomotive	0-8-0
Service	Switching
Cylinders, diameter and stroke	25 in. by 28 in.
Valve gear, type	Baker
Valves, piston type, size	14 in.
Weights in working order:	
On drivers	231,000 lb.
Total engine	231,000 lb.
Tender	158,500 lb.
Total engine and tender	389,500 lb.
Wheel bases:	
Driving	15 ft.
Total engine and tender	53 ft. 3½ in.
Driving wheels, diameter outside tires	51 in.
Boiler:	
Type	Straight top
Steam pressure	175 lb.
Fuel, kind	Soft coal
Diameter, first ring, inside	80 in.
Firebox, length and width	102⅛ in. by 72 in.
Tubes, number and diameter	221—2 in.
Flues, number and diameter	36—5¼ in.
Length over tube sheets	15 ft.
Grate area	51 sq. ft.
Heating surfaces:	
Firebox	194 sq. ft.
Syphons	57 sq. ft.
Tubes and flues	2,496 sq. ft.
Total evaporative	2,747 sq. ft.
Superheating	673 sq. ft.
Combined evaporative and superheating	3,420 sq. ft.
Tender:	
Water capacity	8,000 gal.
Fuel capacity	13 tons
Maximum rated tractive force	51,041 lb.
Weight proportions:	
Weight on drivers ÷ tractive force	4.53
Total weight engine ÷ comb. heat. surface	67.6
Boiler proportions:	
Tractive force ÷ comb. heating surface	14.95
Tractive force × diam. driver ÷ comb. heating surface	763
Firebox heating surface ÷ grate area	4.92
Firebox heat. surface, per cent of evap. heating surface	9.14
Superheat. surface, per cent of evap. heating surface	24.5

Front View of the Tender Showing the Bunker and Tank Construction to Afford Clear Vision to the Rear

Rear View of the Engine Showing the Arrangement of Cab Curtains

same size of cylinders, 25 in. by 28 in. The tractive force of the new power is 51,041 lb.

Each of the new units are equipped with a Ragonnet Type A power reverse gear, a type A superheater, and Thermic syphons. They are equipped with Baker valve gears. Railroad company standards were used in the construction wherever possible, owing to the similarity in the design to switchers already in service.

The tenders have a water capacity of 8,000 gal. and a fuel capacity of 13 tons. It will be noted from the illustrations, that special attention has been given to the design of the tenders to afford the engine crew clear vision in back-up work. The top of the tank sets several inches below the sills of the cab windows, while the sides of the coal bunker are set in to afford a clear view to the rear from the rear cab windows. The forward wall of the coal bunker is designed to afford protection to the cab from rain and snow. The side and top cab curtains are secured to the cab, as shown in one of the illustrations, so that when closed they fit snugly around the forward wall of the bunker and front of the tender. This affords complete protection to the engine crew in stormy weather, and prevents rain and snow beating into the cab when backing up.

* * *

The Southern Pacific's "Del Monte Express" at San Francisco, Cal.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended November 30, which included Thanksgiving day, amounted to 837,107 cars, a reduction as compared with the corresponding week of last year of 63,449 cars. Loading of livestock, coal and coke showed increases as compared with last year, and coal and coke showed increases as compared with 1927. The largest reduction as compared with last year was in miscellaneous freight which fell off 33,339 cars, but grain and grain products accounted for 14,893 cars of the decrease. All districts reported decreases as compared with 1928 and the Pocahontas was the only one to show an increase over 1927. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, November 30, 1929

Districts	1929	1928	1927
Eastern	181,287	198,929	200,573
Allegheny	170,599	183,539	179,581
Pocahontas	52,697	54,224	46,523
Southern	123,471	138,832	147,819
Northwestern	98,459	105,649	114,933
Central Western	137,672	139,747	146,196
Southwestern	72,922	79,636	82,862
Total Western Districts	309,053	325,032	343,991
Total All Roads	837,107	900,556	918,487
Commodities			
Grain and Grain Products	38,698	53,591	49,940
Live Stock	25,765	25,623	34,234
Coal	180,539	179,122	158,196
Coke	11,258	10,210	9,031
Forest Products	48,589	58,448	61,118
Ore	9,438	11,183	9,744
Merchandise L.C.L.	219,949	226,169	256,581
Miscellaneous	302,871	336,210	339,643
November 30	837,107	900,556	918,487
November 23	950,280	1,029,237	840,642
November 16	983,323	1,056,120	968,052
November 9	1,049,475	1,054,353	975,134
November 2	1,071,650	1,103,942	1,039,075
Cumulative totals, 48 weeks	49,448,796	48,072,852	48,379,016

The freight car surplus for the period ended November 23 averaged 289,669 cars, an increase of 63,538 cars as compared with the week before. This included 155,166 box cars, 94,243 coal cars, 22,405 stock cars and 8,298 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended November 30 totaled 61,413 cars, a decrease from the previous week of 3,165 cars and a decrease from the same week last year of 22,827 cars.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
November 30, 1929	61,413	33,560
November 23, 1929	64,578	35,792
November 16, 1929	62,825	37,130
December 1, 1928	84,240	39,546
Cumulative Totals for Canada		
November 30, 1929	3,311,014	1,952,329
December 1, 1928	3,442,928	1,895,760
December 3, 1927	3,149,162	1,787,229

FOUR WEEKS IN JAIL was the penalty imposed in court at Calw, near Stuttgart, Germany, on September 11, against Eugene Hiller who, in broad daylight, drove his automobile through a gate and stopped on a railroad crossing. After stopping he saw a train coming, and then concluded that he would save himself by driving through the other gate, which he did, escaping by the skin of his teeth. On appeal, the verdict was changed from imprisonment to a fine of 400 marks. Hiller's only excuse was that the glare of sunlight from the window of the gateman's shanty had blinded him.

Railway Budgets an Aid to Orderly Spending*

The results of a survey of the budgeting practices of some fifty railways in the United States

By Elmer T. Howson

Western Editor, Railway Age

THE railway industry deals in large figures. Its gross earnings exceed $6,000,000,000 annually. Of these funds it expends nearly $1,500,000,000 annually for materials and equipment for the current repair and replacement of its physical property.

This is a large sum. It is so large that it is imperative that it be spent most wisely and for those purposes which will contribute most largely to improved or cheaper transportation service, or both. It is from this necessity that the suggestion of a budgetary control of these expenditures has arisen.

In a discussion of this suggestion, several questions arise at once. Can a railway anticipate its needs with any degree of accuracy? Can these needs be forseen sufficiently in advance to enable them to be met through the development and prosecution of an orderly program of improvement? How far is it practicable for a road to go in formulating a program for its routine as contrasted with its special expenditures? Granting that such a plan can be put into effect, what are its advantages and disadvantages?

To ascertain the answers to these and other allied questions a survey has been made of the practices of some fifty of the largest railways in the United States, whose combined mileage exceeds two-thirds of the total for the country and whose expenditures, routine and special, constitute a still higher proportion of the total. Conclusions drawn can, therefore, be considered as fairly representative of the industry.

The first fact that stands out in this survey is that the majority of the railways do budget their expenditures to at least some degree, this being true of approximately four-fifths of the roads studied, both large and small. Equally striking, however, is the fact that some of the largest and most successful roads do not follow this practice, including such well managed properties as the Atlantic Coast Line, the Louisville & Nashville, the Lehigh Valley, the New York Central and the Reading.

The case for these roads is stated by E. R. Loomis, president of the Lehigh Valley, who reports that on his road "capital expenditures are made as needed and take precedence by reason of the economy produced. Under this method," he adds, "available funds are kept liquid and we are free from the restriction of an established program."

In a similar vein W. R. Cole, president of the Louisville & Nashville, states that he can appreciate that "for some industries whose improvement work is restricted to a more or less limited class of facilities it may be practical to prepare with satisfactory results, a program years in advance but where the character of the work is practically unlimited, such as that involved in railroad improvements, and where there are constantly changing economic and financial conditions, standards of operation and designs of equipment, the preparation of a comprehensive program becomes a much more complicated matter. Such conditions naturally influence not only the quantity of improvement work desired or contemplated but serve also to a large extent, to render obsolete estimates of cost employed, with resultant loss of expense required to prepare such programs." For this reason he states that the Louisville & Nashville does not handle its expenditures for improvements or additions in accordance with any pre-arranged program or budget but undertakes to authorize and prosecute its work only as operating and other conditions may make it desirable, or the immediate and future prospects may justify.

Likewise, J. M. Davis, president of the Delaware, Lackawanna & Western, advises that, while preparing an annual estimate of expected maintenance expenditures, this road considers and acts on each major improvement expenditure separately and, after full consideration, selects those items that appear to have merit, for which approval is granted singly. Similarly, on the Reading no budget is prepared although the management has constantly before it a definite program for improvements which are undertaken in the order of their importance at such time as funds are available. Another road which does not make it a practice to budget its expenditures is the Atlanta, Birmingham & Coast, where B. L. Bugg, president, states that "operating revenues have fluctuated to such an extent that it is almost impossible to forecast with any degree of accuracy for more than a month or two in advance."

Many Roads Use Budget System

On the other hand a larger and equally well operated group of roads make it a practice to budget their expenditures, although with varying degrees of completeness. Among these roads is the Illinois Central, whose president, L. A. Downs, enumerates as some of the advantages of this practice:

(1) The allowance of time for due and unhurried consideration of the necessity, cost and advantage of improvements, permitting thoroughness in the investigation of each project and (2) the desirability of affording each officer the opportunity of familiarizing himself with the operating and other conditions surrounding each project.

In a similar strain F. W. Sargent, president of the Chicago & North Western states that "budgeting enables us to forecast our available cash for a year in advance. It also has a wholesome effect upon the morale

* Abstract of an address presented before the annual meeting of the Railway Business Association at Chicago, November 21.

of employees because it stabilizes employment. It produces economies because, if carefully prepared, it covers most of the year's work on an economical basis and offers a direct inducement to operating officers to accomplish results within the authorized expenditure."

The first step in the preparation of a budget is the determination of the amount of money that will be available for expenditure. On the North Western, an estimate is first made of the volume of business. This estimate is made by the traffic department, which arrives at its conclusion by the aid of careful reports from off-line as well as on-line agencies, supplemented by estimates from local station agents and division superintendents. After these reports are analyzed, they are compared with general national business conditions, including credit and cost of money, and with forecasts by recognized authorities. The conclusions thus reached are compared with similar conclusions for previous years and a final conclusion is reached by the president as to the volume of business that will be transacted in the succeeding year. As an indication of the accuracy with which it is possible to make such estimates, the North Western has been able to forecast, within approximately $300,000 each year, gross revenues exceeding $150,000,000.

Methods of Formulating Budgets

Having determined the amount of money that will be available for improvements during the new year, the practice of formulating these budgets also varies widely, although it is the very general practice to divide proposed expenditures among the following three headings:

1—Items absolutely necessary
2—Items tending to prevent or relieve congestion
3—Items tending to more economical operation

In the development of this program on the Illinois Central, for illustration, such new work as may be considered advisable to improve operations is noted, rough estimates of the cost are made and the details are worked out to exhibit in a concrete manner the improvement to be effected and the actual saving that will result if the budget is carried out. Each subordinate officer and each superintendent accumulates data for his department or division during the year. In October or November of each year, these suggestions and plans are brought together and the relative importance of various items is determined in a series of conferences. At a final meeting of the chief engineer, the general superintendent of motive power, the engineer maintenance of way, the general manager and the operating vice-president, the projects still remaining on the approved list are itemized and a budget prepared.

On the Nashville, Chattanooga & St. Louis, the division superintendents, on the recommendation of subordinate transportation and maintenance of way officers, prepare typewritten lists, mile by mile, on each division of the improvements which, in their judgment, are desirable for one year in advance. These reports are consolidated by the engineering department for the roadway and by the general manager's office for the transportation work and are used as a basis for consideration at an annual inspection of the property by the general manager and the chief engineer, usually in the month of October. After this inspection, the work that is considered desirable is then submitted to the general manager for his further consideration. When the budget is finally submitted to the president, the general manager includes those items which are essential, first, for safety, then for efficiency, and finally those which are considered desirable but which contribute in a lesser degree to safety and efficiency of operation. If the aggregate of the budget is larger than in the judgment of the president can be authorized, the work is scaled down and the projects considered for efficiency or desirability according to the highest yield on the investment. Budgets for the mechanical department are made up by the mechanical officers substantially in the same way.

On the New Haven, the plan is broadened to encourage the traffic, stores and real estate departments to submit to the general manager their recommendations for expenditures. These recommendations are referred to the engineer maintenance of way or the general mechanical superintendent for consideration.

On the Union Pacific, preliminary budget data covering capital expenditures are prepared late each year. This is done by the various interested departments and shows, item by item, the work contemplated during the following year, with its location, estimated cost, description and reason for recommendation. Each department then submits its data to the general manager, who in turn calls a conference with each department head, at which the items presented are gone over in detail and revised to meet the views of the general manager, who then submits it to the vice-president of operation, who likewise reviews it and after conference with the general manager and other officers, submits it to the president, with his recommendations.

Early in the year, the president then makes a budget inspection trip over the system, accompanied by the various officers, with the view of reducing the items recommended to include only those which cover improvements that are essential for the year. Improvements proposed are looked over on the ground and notes made of their importantance relative to other work proposed. Those improvements considered by the president as essential are ranked in the order of importance and are submitted to the finance committee of the board of directors with the recommendation that the items so designated be approved. Final approval of the budget rests with this committee.

A somewhat different procedure is followed on the Chicago & North Western where all budget expenditures in each department are concentrated in a committee appointed by the head of that department. The budgets of this committee are in turn consolidated and reviewed by the president. Budgets are prepared covering expenditures for roadway and structures and for equipment and also for transportation, by divisions. The latter budget, which includes fuel, is predicated on past experience and an estimate of tonnage and reflects an effort to reduce each item in succeeding budgets. All of these budgets are prepared by the North Western for a year in advance except that for transportation which is monthly.

On the Great Northern it is the practice to prepare a more or less flexible budget on which the more important improvements are listed and lump sums added for certain other classes of expenditures such as industrial spurs, right-of-way fences and office equipment, for which authorizations for expenditure are submitted during the year. In preparing these estimates, the department officers must of necessity look ahead for several years in order to insure that the work which they recommend for the current year is most urgent.

How Far Can A Road Anticipate Its Needs?

A question that arises very early in any consideration of a budgetary form of expenditure control is the period for which it is possible to plan expenditures in the fu-

ture. Many roads feel that their expenditures must be governed so directly by their revenues that they make little or no attempt to plan more than a year ahead, except for such projects as require a longer time for their completion. Other roads, however, make relatively few appropriations without having a program for succeeding years before them. Thus the Gulf, Mobile & Northern plans two years in advance, while such roads as the Duluth, Missabe & Northern and the Chicago & Eastern Illinois plan for three years.

Use of Five Year Programs

A five-year program is still more common, being followed on such roads as the Chicago, Rock Island & Pacific, the Central of New Jersey, the Maine Central, the Minneapolis, St. Paul & Sault Ste. Marie, the Wabash and the Wheeling & Lake Erie. On the Chesapeake & Ohio, the Missouri Pacific and the Missouri-Kansas-Texas, major improvements, such as the re-arrangement and enlargement of yards and engine terminals, additional main tracks, grade and line revisions and additions to equipment are planned five years in advance, anticipating the normal growth of traffic and the proper development of the territory served. On the Northern Pacific, certain major items of improvement are programmed over a period of several years, such as, following the introduction of heavier power, the re-inforcement or replacement of a considerable number of old bridges.

On the Delaware & Hudson much work, such as bridge strengthening, is planned as far as 10 years in advance and still other projects, such as the acquisition of real estate, are budgeted as far as 20 years in advance. Some roads feel, however, that any attempt to forecast improvements for more than 5 years or at the most 10 years is so speculative, owing to changing conditions, as to be of doubtful value.

The railways present many outstanding illustrations of consistent adherence to improvement programs over a period of years. On the Denver & Rio Grande Western a four year program of line and equipment rehabilitation involving an expenditure of more than $28,000,000 was formulated in 1925 and carried to conclusion last year. In this program 143 miles of main line were relocated, 156 curves were eliminated, 174 bridges were built or rebuilt, more than 350 miles of automatic signals were installed and 54 locomotives and more than 1,600 freight cars were purchased.

On the New Haven an extensive rehabilitation program was undertaken some 10 or 12 years ago on a 10-year basis involving improvements to increase capacity, improve service and reduce operating costs. This program included such important projects as the construction of new freight classification yards at Cedar Hill (New Haven), at Providence and at Hartford and the addition of many new locomotives, and was followed consistently until its completion within the last year.

The Western Pacific is another road which has developed an extensive improvement program. In 1927, the complete rehabilitation of the property was undertaken on a five-year basis. In this program, it was planned that the rail in certain sections of the line should be renewed during each of the five years of the program. Bank widening and ballasting were treated likewise. The replacement of timber trestles and bridges was planned to take place in the year in which it was estimated that the condition of the timber structure would require major repairs. Construction of concrete tunnel portals and lining was handled on a similar basis. The rebuilding of freight cars was planned on the basis of giving preference to the type of equipment most urgently needed.

The extent to which different roads attempt to budget their expenditures, particularly those maintenance expenditures chargeable to operating accounts, varies widely. On the Nickel Plate it has never been considered necessary to budget maintenance items in the same manner as new work. It is felt that business conditions, earnings and changes in traffic considerations must govern and the maintenance program is varied from time to time to meet the needs.

On the Santa Fe and on the Monon it is likewise not the practice to budget maintenance expenditures except where there are heavy charges to maintenance incidental to the capital expenditure program. This is the practice also on the Burlington where the budget for capital improvements also includes maintenance of way expenditures chargeable to operation which result from budgets involving capital expenditures. Maintenance of way expenditures are controlled by the authorization of working forces each month, in accordance with definite plans formulated in advance, although the work is authorized from month to month with close regard to traffic conditions, weather and other factors that might temporarily affect the track and roadbed. Maintenance of equipment forces on the Burlington are also authorized each month in advance, while definite programs are arranged from time to time with particular reference to general overhauling and rebuilding of equipment.

On the other hand, it is the practice of the Delaware & Hudson, the Duluth, Missabe & Northern, the Gulf, Mobile & Northern, the Maine Central, the Erie and the Wabash, among other roads, to budget their maintenance of way expenditure as well as those for capital improvements. On the Chicago, Milwaukee, St. Paul & Pacific, there is prepared, at the close of each year, a budget of expenditures for maintenance of way and for maintenance of equipment by primary accounts for the ensuing year. These budgets are prepared by the engineer maintenance of way, the superintendent of motive power and the superintendent of the car department, who submit them to the vice-president of operation for review and approval and who, after consulting with the vice-president of finance and accounting, submits them to the president for final authorization.

On the Union Pacific separate budgets are also made up for covering maintenance of way and maintenance of equipment work. These cover the major elements of labor and material in quantities and the costs of the principal items of work. A tentative program is prepared for the year, but authorization is given only by quarterly periods. These quarterly authorizations are made by the president.

Among the growing number of roads which carry the budgetary control of expenses down to the routine operating accounts are the Central of Georgia and the Illinois Central which hold so-called monthly expense meetings. Each department is given an allotment for the month, which is flexible in that transportation expenses covering actual train operation, for example, automatically permit of expansion or retrenchment, in the event of a variation in traffic. Each department head in turn divides his monthly appropriation among his subdepartments and his allotment is eventually passed on down to the individual. The heads of the departments are required to adhere strictly to these figures so far as they are not affected by fluctuations of business. At the next meeting of the staff their actual expenditures are checked against the allotments.

The New Haven is another road which budgets all

of its operating expenses, believing that there is the same necessity for their control as for the control of capital expenditures. Many improvements include charges to operation and in setting up the improvement program due regard must be given both to the capital requirements and the charges to operating expenses.

The New Haven's maintenance of way operating expense budget includes the direct maintenance charges incurred by division engineers, the signal engineer, the superintendent of electric transmission and communication and other officers, also the charges to operation from authorities-for-expenditure for work carried out by the heads of departments, and the charges handled through vouchers for joint facilities, etc. All of these items, which of course depend on authorized programs, are budgeted for one year in advance and must be followed unless further authorities are given. An exception is the expenditures which may result from an unusually severe winter, as the budget is based on normal winter conditions.

Similarly, in the maintenance of equipment operating expense budget there are the direct maintenance costs for which master mechanics and shop superintendents are responsible. In addition, there are improvements to rolling stock made under AFE's which bear charges to both capital and operating accounts; the operating portions are included in the operating budget. The charges for joint facilities depend on authorized programs and are adhered to unless further approval is obtained.

In addition to improvement and maintenance expenses, the New Haven also budgets all transportation expenses, dividing them between (1) the "variable expenses," viz., those which vary, although not directly, with the volume of traffic, such as the wages of train and engine men in freight and passenger service, all fuel consumed in this service, the labor costs and fuel charges at all important freight stations, and the labor and fuel charges at all important yards. The allowances for these expenses, which make up more than half of all transportation charges, are based on the contemplated volume of traffic and are adjusted upward or downward as there are variations. (2) The remaining charges, such as supervision, dispatching, signals and interlockers, telephone and telegraph and crossing protection, are included under fixed expenses and an average amount is allowed each month, irrespective of volume of traffic, but taking into account seasonal fluctuations, as for example, the opening of summer stations and variations in the number of working days in the month.

Another measure which is employed to varying degrees on a number of roads and which aids greatly in promoting the orderly conduct of a season's work, is the equalization of expenses. After a budget is once prepared and approved, the allotment for a specific purpose, as for maintenance of way, may be divided arbitrarily into twelve equal monthly or other prearranged installments and the charges so entered on the records while the work is done at the most economical period. By this means, the effects of seasonal or other fluctuations in traffic are avoided.

How Complete Can A Budget Be Made?

In preparing a budget of expenditures for a year in advance, it is to be expected that needs will arise which could not be anticipated at the time the budget was prepared, due either to unexpected developments or to the requirements of federal, state or municipal authorities. Usually, the total amounts involved are only a small part of the total expenditures. On the Burlington, the budget that is finally approved covers approximately 80 per cent of the expenditures that are actually made during the period under consideration, while on the Wabash this proportion is raised to 85 per cent and on the Nickel Plate the record for several years shows that it is possible to include in the budget approximately 95 per cent of the expenditures for improvements.

To cover such contingencies it is the practice of the Boston & Maine and the New Haven to include in their budgets an item for unforeseen expenditures which is generally sufficient to meet the year's unanticipated needs and to keep the total expenditure within the authorization. On other roads, including the Santa Fe, the Chicago & Eastern Illinois and the Gulf, Mobile & Northern, it is the practice to secure special authority or supplemental appropriations to cover them.

On the Kansas City Southern, the Delaware & Hudson and the Monon, effort is made to see that the budget is not exceeded. Urgent, unanticipated needs are met by substituting them for less important items in the budget, which are deferred until the succeeding year.

What Are the Results?

To determine the results secured from a system of budgetary control of expenditures one must turn to those roads which have given it the most extended trial. W. B. Storey, president of the Santa Fe System, advises that "without a budget we could not have any intelligent program of improvements, nor could we know whether we would have the money for improvements."

George Hannauer, late president of the Boston & Maine, stated that "an operating budget sets a mark for all departments, which is in itself very desirable." A. E. Clift, president of the Central of Georgia, states that "we have found the budget system an incalculable benefit in the conduct of our business." R. B. White, president of the Central New Jersey, expresses the conclusion "that the budget plan is not only highly essential but absolutely necessary in the proper conduct of the operation of a railway."

J. J. Bernet, president of the Chesapeake & Ohio, advises that "a budget permits definite plans, programs, and financial arrangements to be made in advance. The value derived from budgetary control of expenditures is represented by greater efficiency in the conduct of maintenance work in accordance with predetermined schedules which permit the assembling and delivery of materials at the time needed, the maintenance of uniform forces, thus retaining experienced laborers and mechanics, and the ability to conduct the work in an organized and orderly manner."

T. C. Powell, president of the Chicago & Eastern Illinois, favors the budget system of controlling expenditures for the reason that it enables the heads of departments to plan their work and obtain the necessary material in advance so that the work can be done in the most economical manner.

F. E. Williamson, president of the Burlington, states that "the budget method of authorizing and controlling capital expenditures is of pronounced benefit, by this general survey of the requirements on the system, we are able to balance the work in a satisfactory manner, not only preventing miscellaneous authorizations which might aggregate a considerable sum and not be thoroughly in accord with the policy of improvement of the property, but we are able also to keep the expenditures at a consistent figure each year; and to tell at any time the amount of authorized work, and make financial arrangements accordingly. We think this budget plan is

very necessary to the proper control and programming of improvement work."

In like manner H. A. Scandrett, president of the Milwaukee, advocates the use of the budget because it results "in an orderly program and provides means for the control of expenditures. A budget requires a careful estimate of the cost and of the savings. It permits of the selection of those improvements yielding the best return, and insures the orderly and economical improvement of the property. In the case of this company, we make a semi-annual forecast of gross revenues and net earnings, from which the amount of money to be obtained from income and that which will have to be provided for by the sale of securities is determined."

J. E. Gorman, president of the Rock Island, feels that the budget system is the only method which can be used with any degree of certainty to control expenditures and to enable one to show that expenditures are being made in the direction that will result in the most benefit to the property. It is only through budgets that the relative importance of work can be determined through the savings effected by the expenditures.

L. F. Loree, president of the Delaware & Hudson, states that "budgetary control promotes careful consideration of the whole problem by subordinate officers, a higher sense of responsibility for bringing forward the work and seeing that it is executed within the estimated cost and enables the president and the board of directors to deal more intelligently with the suggestions from their standpoint. It also serves to insure the completion of the work." C. E. Denney, president of the Erie, adds that definite knowledge at the beginning of the year of the amounts to be expended and information as to the time required for each item on the budget aids materially in arranging financial programs to meet the cash requirements.

H. M. Adams, president of the Western Pacific, is another executive who comments on the fact that budgetary control of expenditures makes for better and more efficient use of funds and planning of forces and equipment. W. M. Duncan, president of the Wheeling & Lake Erie, states that budget control is of great assistance in "making ends meet" particularly in lean years. A. E. Wallace, vice-president and general manager of the Minneapolis, St. Paul & Sault Ste. Marie concurs in this thought and adds that the budgeting of expenses enables a road to take advantage of the labor market, as well as to carry on the bulk of its work at a time when conditions are most favorable.

J. B. Hill, president of the Nashville, Chattanooga & St. Louis, expresses the opinion that the budget promotes economy. "I believe," he states, "that various departments will spend much less on a budget allowance than without such an allowance. For example, our maintenance of way department is told each month what it can spend, this being generally a certain proportion of the year's allowance, and each subordinate officer down to the section foreman knows what his allowance will be for the month."

In the same manner, J. J. Pelley, president of the New Haven, states that "we regard budgetary control as the best method thus far devised to regulate expenses. Under the budget everyone responsible knows precisely the program to be followed during the coming year and the surveys given in advance of setting up the budget insure that the management is familiar with all of the improvements that will be necessitated in the immediate future and so far as important facilities are concerned, in the subsequent several years. By having programs definitely established it is, of course, far easier to regulate forces, thus stabilizing them; to order materials and to arrange financing. Carrying the operating budget through to net income of course provides everyone with the standard that must be met."

L. R. Powell, president of the Seaboard Air Line, presents still another advantage of budgetary control in his comment that it "results in comprehensive and accurate information being available as a basis for executive decisions and co-ordinated purchases, operations, maintenance, extension and finance; in short, it brings all the departmental activities into a harmonious unit of management not otherwise available."

J. E. Taussig, president of the Wabash, summarizes that road's experience in the statement that "the value of the budget lies in the fact that we have anticipated our requirements for the year to a very large extent; that by anticipating in this manner the work can be performed during the year in an advantageous and economical way; and that it enables the executive officer to have before him at all times the expenditures that are to be made, keep in touch with the progress of the work, anticipate his financial requirements, and follow out a definite plan of improving and maintaining the property."

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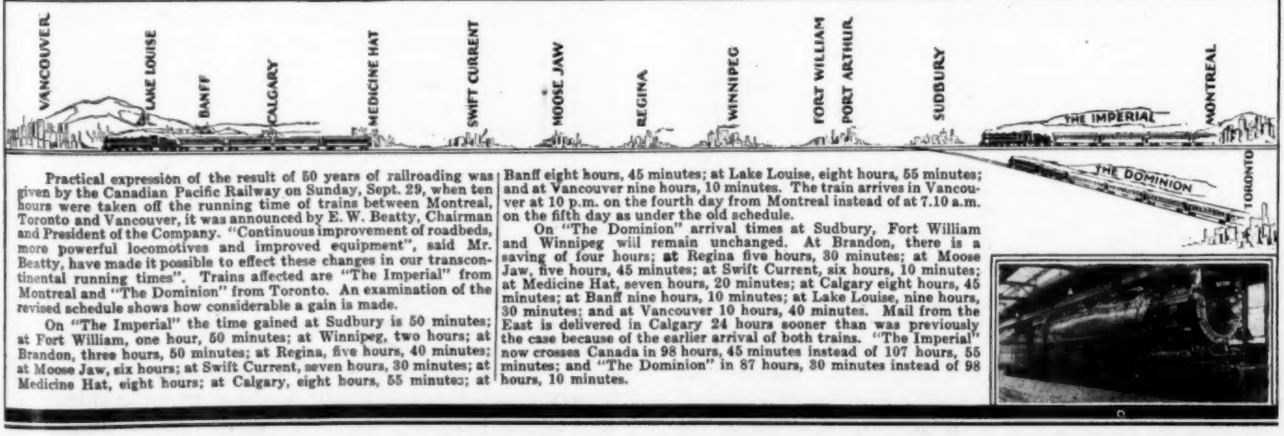
Canadian Pacific Accelerates Schedule of Transcontinental Trains



Practical expression of the result of 50 years of railroading was given by the Canadian Pacific Railway on Sunday, Sept. 29, when ten hours were taken off the running time of trains between Montreal, Toronto and Vancouver, it was announced by E. W. Beatty, Chairman and President of the Company. "Continuous improvement of roadbeds, more powerful locomotives and improved equipment", said Mr. Beatty, have made it possible to effect these changes in our transcontinental running times". Trains affected are "The Imperial" from Montreal and "The Dominion" from Toronto. An examination of the revised schedule shows how considerable a gain is made.

On "The Imperial" the time gained at Sudbury is 50 minutes; at Fort William, one hour, 50 minutes; at Winnipeg, two hours; at Brandon, three hours, 50 minutes; at Regina, five hours, 40 minutes; at Moose Jaw, six hours; at Swift Current, seven hours, 30 minutes; at Medicine Hat, eight hours; at Calgary, eight hours, 55 minutes; at Banff eight hours, 45 minutes; at Lake Louise, eight hours, 55 minutes; and at Vancouver nine hours, 10 minutes. The train arrives in Vancouver at 10 p.m. on the fourth day from Montreal instead of at 7.10 a.m. on the fifth day as under the old schedule.

On "The Dominion" arrival times at Sudbury, Fort William and Winnipeg will remain unchanged. At Brandon, there is a saving of four hours; at Regina five hours, 30 minutes; at Moose Jaw, five hours, 45 minutes; at Swift Current, six hours, 10 minutes; at Medicine Hat, seven hours, 20 minutes; at Calgary eight hours, 45 minutes; at Banff nine hours, 10 minutes; at Lake Louise, nine hours, 30 minutes; and at Vancouver 10 hours, 40 minutes. Mail from the East is delivered in Calgary 24 hours sooner than was previously the case because of the earlier arrival of both trains. "The Imperial" now crosses Canada in 98 hours, 45 minutes instead of 107 hours, 55 minutes; and "The Dominion" in 87 hours, 30 minutes instead of 98 hours, 10 minutes.

The C. P. R.'s Graphic Presentation of Its Accelerated Transcontinental Train Schedules

Arguments in Accounting Cases

Cost accounting called impracticable—Test case urged to establish legal basis for depreciation accounting

WASHINGTON, D. C.

ORAL argument in the accounting cases—revised classifications (*Ex Parte* 91) and accounting for depreciation (Docket 15,100) was heard by the entire Interstate Commerce Commission on December 5 and 6. In the revised classifications case, the railroads were represented by E. R. Woodson, secretary of the Railway Accounting Officers Association. In the depreciation accounting case, the Presidents' Conference Committee was represented by W. G. Brantley, Leslie Craven and Sanford Robinson. In the latter case several of the railroads also made separate presentations—the Southern Pacific, represented by J. R. Bell; the Atchison, Topeka & Santa Fe, represented by C. H. Woods; the New York Central, by Clyde Brown; and the Norfolk & Western by T. W. Reath.

The argument of E. R. Woodson, representing the railroads in the accounting revision case, follows in part:

The witness for the National Industrial Traffic League, J. W. Roberts, founded his proposal on the declaration that the main purpose of cost intelligence is to aid the management. We take it for granted that cost accounting for managerial use is not in issue, due to the finding of the proposed report to the effect that the Commission would not be justified in imposing any new accounting system upon the railroads for the purpose of achieving results in efficiency and economy which their executives believe can be better attained in other ways. Mr. Roberts testified that it would be exceeding the practical requirements for current cost accounts to comprehend each and every kind and class of business moving. He admitted that his plan would show only average costs such as are obtainable under the present practices. His method would not dispense with special studies, and he held out no hope of eliminating special studies under any plan.

L. R. Bitney did not undertake to present his proposal on behalf of all the state commissions nor any one of them. His method was an effort to have railway accounting and statistics by or for state lines, and was found by the railroads to be impracticable, lacking in useful and dependable results and involving considerable expense.

The Taylor Society offered some suggestions which embodied what the railroads are now, and for some time, have been doing. The principal witness for the Taylor Society stated that continuous cost accounting systems intended to produce actual costs are absurd, cause nothing but trouble, and will drive one insane. He knew of no industry, considered as a whole, that has inflexible uniformity in cost accounting throughout the industry.

Continuous Method Impracticable

Testimony was presented that the railways in England, Australia, France and Belgium do not have cost accounting, nor even a separation of operating expenses between freight and passenger services. The German railways have recently been experimenting with what is sometimes called cost accounting, but the evidence shows that the method is not cost accounting, and produces average costs such as could be obtained under the American railway methods.

It is generally admitted and conceded that special studies cannot be eliminated. The experience of railways in other countries speaks for itself regarding cost accounting. The regulatory bodies, after struggling with this problem for more than forty years, offer no solution free from objections. The experience of the American railways tends to indicate the impracticability of continuous routine cost accounting for the railways.

Much of the wordy warfare incident to so-called cost accounting for railways may be attributed to the lack of precise definitions. Cost accounting is a generic term. It has no generally accepted meaning. To illustrate, among the definitions applied to railway cost are:

1. Part of operating expenses.
2. Operating expenses.
3. Operating expenses, including taxes.
4. Operating expenses, together with a part of interest charges.
5. Operating expenses, together with return on capital.
6. Operating expenses, together with return on value.

This list is obviously not complete, and will tend merely to suggest the confusion engendered by the widely varying definitions of "cost."

A Confusion of Terms

A frequent and confusing application is the use of the word "cost" as being synonymous with "expense." This occurs, in some instances, in the Commission's accounting classifications. In the operating expense classification "cost" is given the significance of part of operating expenses, while in the investment accounting classification "cost" is used in the sense of full and complete cost. We often hear mention made of out-of-pocket costs, although generally the more accurate and less confusing terminology would be out-of-pocket expenses. Reference is not infrequently made to the separation of railway costs between freight and passenger services, but the allusion would better be made to the separation of railway operating expenses between freight and passenger services. Sufficient has been said to indicate that the word "cost" is fleeting and elusive; it is necessarily deficient as a medium for conveying clarity of thought.

The term "cost accounting" has no application to railways for the reason that the determination of railway costs would not be accounting but would be a statistical or analytical process. If there is any such thing, and if it needs any designation, it should be called statistical cost analysis.

According to the courts, the object of a system of accounts prescribed by the Interstate Commerce Commission is to display the pertinent financial operations of a carrier, and the Commission has said that such accounting data must be true records of the facts they purport to show.

It is self-evident that cost accounting data disclosing other than actual, complete costs would not necessarily be regarded as true records of the facts they purport to show.

Mr. Roberts, witness for the National Industrial Traffic League, stated that cost accounts cannot be amalgamated with financial accounts for the reason that they serve widely different purposes and eventually must assume different form.

Would Confuse, Rather Than Aid, the Management

So-called cost accounting would substantially detract from, and tend to destroy, the usefulness of the accounting or statistical results for supervisory or managerial purposes, inasmuch as the technique of cost accounting is not to accomplish the object of financial accounting but, on the contrary, is the conversion of financial accounting—departmental expenses—into classified service or other expenses, or so-called costs. Cost accounting is, therefore, inconsistent and inharmonious with financial accounting. If so-called cost accounting were superimposed on financial accounting or otherwise made a part of the present accounting structure, it is obvious that railway accounting would then lack congruity and cohesion.

Railways are operated with joint costs, using this term in the significance applied in economics; in other words, the expenses of the railway are for the traffic as a whole and not necessarily related to specific services, commodities, or units. Economists recognize railways as an outstanding illustration of costs or expenses impossible of assignment and exact apportionment to the units of traffic transported. The record is replete with illustrations.

Mr. Woodson then cited several authorities including a report of the Interstate Commerce Commission on the impracticability of cost accounting as applied to railroads. Continuing, he said:

Theoretically, the determination of relative costs might be through absolute or actual costs and, under those circumstances, would involve surmounting the practical obstacles in the way of continuously ascertaining absolute costs. If determined by an arbitrary formula, relative costs would be controversial and subject to objection in the same manner and to the same extent as every known formula for determining railway costs.

During the first six years of the existence of the Interstate Commerce Commission, an attempt was made at cost separation. This was abandoned in 1892 by consent of the Commission, the state commissions, and the railways. Twenty years later, an effort was again made, but its application was partial. That requirement was in effect but a short time. The Commission suspended its requirement for apportioning common expenses during the years 1917, 1918, and 1919. In 1920, the attempt was again made for separation of operating expenses and resulted in a method that necessarily involves some degree of inexactness.

The substantial influence of judgment or opinion in attempting to ascertain railway costs, cannot be ignored. The costs are joint; the circumstances vary. The determination of railway costs must differ with the conditions, and cannot conform to a theoretical standard.

Need for Simplification

The railroads did not seek a revision of the accounting classifications. We do not question the need for any revision but merely point out that this is a matter properly to be determined by the Commission.

If the existing accounting classifications prescribed by the Commission are to be revised, it is the viewpoint of the railroads that the revision should be in the direction of simplicity and not complexity; should contract and not expand the accounting classifications; and that economy, directness, and dependability of accounting results should be controlling.

The railroads advocate, first, that the accounting rules of the Commission be adequately and fully informative of the investment account for steam railroads; second, that the operating revenues and operating expenses be stated in a manner that will continue to reflect the facts; and third, that the income, profit and loss, and balance sheet continue to portray accurately the results.

We respectfully invite your attention to the recommendations and suggestions made by the railroad representatives with regard to the revision of the accounting classifications, set forth in the record and in our brief; and believing that the Commission will consider those recommendations on their merits, we submit our case on the record and on our brief, assuring the Commission unqualifiedly that the Railway Accounting Officers Association will be glad to cooperate with the Commission and its representatives in any revision of the accounting classifications which the Commission may undertake, and in the handling of accounting and statistical questions, in the future as in the past.

N. I. T. League Urges Further Study

Mr. Woodson was followed by J. S. Burchmore, counsel for the National Industrial Traffic League, which sponsored the so-called "alternative plan" prepared by J. W. Roberts and designed to provide cost accounting. Mr. Burchmore said that the League gave its unqualified endorsement to the tentative report of Commissioner Eastman in the accounting revision case, in particular that recommendation that a committee be set up by the commission to inquire further into the subject of cost accounting. He also suggested that this committee, if appointed, also inquire into the subject of accounting for depreciation. He said that the cost accounting plan would serve a useful regulatory purpose and that it was not designed primarily as an aid to management.

He expressed the opinion that cost studies, the method now used for obtaining cost information, were inadequate; that he had seen cost studies, prepared by the same man, which differed materially in method. The Roberts plan, he continued, did not provide for routine cost accounting, but simply revised the accounts in such a manner that cost information could be drawn from them more easily than from present accounts. He took issue with the rather unfavorable report of the commission's Bureau of Accounts on the alternative plan and said that the Railway Accounting Officers Association was not the judge as to the advantage of cost accounting to regulation; that the commission could decide that point itself.

Commissioner Woodlock asked Mr. Burchmore whether operating statistics as now compiled did not give a picture of relative operating efficiency and Mr. Burchmore replied that still further information on this subject would be useful. He cited testimony of a witness from an electric power company which had developed cost accounting allocating expenses among the various classes of consumers and suggested that the problem was not essentially different on the railroads.

He said that, by reliance on special cost studies, the railroads had all the advantage and the shippers none. The railroads he said, do not know what their accounting expenses are; that all clerical expenses are not accounting expenses; furthermore, the railroads always make a plea of expense regarding any innovation which they do not favor. The adoption of an accounting plan with cost accounting features, he added, would save the great expense now attached to the preparation of special cost studies. In closing he called the attention of the commission to the League's interest in the subject of depreciation, his opinions being covered in his brief.

Taylor Society Favors Cost Accounting

Mr. Burchmore was followed by J. C. White, counsel for the Taylor Society. Mr. White explained the nature of this society—a professional association organized to foster the application of scientific management methods in industry—and that its interest in the present case was merely to show what cost accounting methods had been able to do in other industries. He was asked by Commissioner Lewis whether the application of cost accounting methods might not be somewhat more complicated on the railroads than in industry. He replied that the Dennison Manufacturing Company, having a line of thousands of products, was able to use the method to advantage. Cost accounting, he continued, provided a basis upon which prices could be fixed and, also, it acted as an incentive to employees by placing an index on the efficiency of their performance. Commissioner Woodlock asked Mr. White whether, if cost accounting were to be used for regulatory purposes, it ought not to be based on unquestionable grounds and this was conceded.

F. N. Oliver, counsel for the commission, followed Mr. White. He asked that, if a further study of cost accounting were undertaken, it be definitely placed in the hands of the commission's bureaus, expressing the fear that, if its members were representative of special interests, the committee might take on the character of a "debating society."

The first presentation on depreciation accounting was made by W. G. Brantley of counsel for the Presidents Conference Committee on Valuation. Mr. Brantley expressed fundamental disagreement with the principles expressed in the proposed report on depreciation accounting. He referred to page 6 of the railways' brief in this case, wherein it was said that: "The committee seriously questions the commission's interpretation of the 1920 amendment to paragraph 5 of section 20 of the Interstate Commerce Act; they seriously question the power of the commission to make the proposed order; they seriously question the correctness of the commission's theory of what constitutes depreciation in valuation which theory is applied in the proposed report, and they believe the proposed order to be an unjust invasion of the inherent managerial power residing in the railroads."

He said that to treat a depreciation reserve as compensation is a violation of the law. Congress, he said, did not require accounting for depreciation but simply ordered the commission to establish classes of property on which depreciation might be charged, and the percentages. The railroads may decide whether or not they desire to charge depreciation, he added. He contended that Congress did not contemplate making depreciation obligatory but merely wished to assure that, if it were utilized, all charges should be fair. To charge both retirement and depreciation reserve, he said, was to charge twice.

The Legal Right to Maintain Property

Leslie Craven continued the presentation on behalf of the Presidents' Conference Committee. Accounting, he said follows the facts and does not establish them. A great waste, he continued, would result if accounting requirements were outlined which should later be upset by the courts. The proposed report, he said, would be invalid under the law since it would not enable the carriers to maintain the integrity of their property. The courts, he pointed out, have repeatedly held that owners of property devoted to the public service are entitled to maintain that property as well as earn a fair return on it. "It is the property itself—not the original cost of it—which is entitled to be maintained and to earn a fair return." He cited as an example a bridge built in 1914 at a cost of $1,000. If this bridge had to be replaced today the cost would be $2,000 and, under the accounting recommended in the proposed report, $1,000 only of this cost could be charged to depreciation and another $1,000 would have to be charged to capital. This, he maintained, would not maintain the integrity of property, but only the investment in dollars and cents, measured in currency of considerably less buying power. He added that, if the principle were applied to railways it would bring about a vast increase in fixed charges to capitalize what would actually be nothing more than adequate maintenance of the property.

He believed that the commission could not under the law prohibit a railroad from replacing a worn-out unit of property with a new one, charging the entire cost to operating expenses, regardless of what the replaced unit had originally cost.

J. R. Bell for the Southern Pacific said that the proposed report would use the bookkeeping reserve for depreciation as a minimum in making deductions from valuation on account of depreciation and that the method of engineering inspection to determine actual depreciation, apparently, would be used only if it appeared that actual depreciation might be greater than the depreciation reserve. He said that the proposed report used the original cost theory of valuation and that the adoption of costs as of 1914 for all property then in service was arbitrary and illegal.

Test Case Advocated

Clyde Brown for the New York Central expressed his agreement with the theory of depreciation of Professor H. E. Riggs of the University of Michigan,* and believed that this theory would come into its own if the Supreme Court of the United States had an opportunity to pass upon it. He urged strongly that, if agreement could not be reached on this subject, a friendly test case be prepared by railroad and commission attorneys and taken into the courts so that some definite progress in solving this problem might be made instead of continuing indefinitely the "symposiums on depreciation which have been going on since 1916." He said that the proposed report holds that the cost of reproduction is the best figure upon which to base depreciation where original cost cannot be obtained, but that finding (8) in the proposed report makes the property investment account the maximum figure which may be used. He suggested that these accounts might be stated on the basis of valuation.

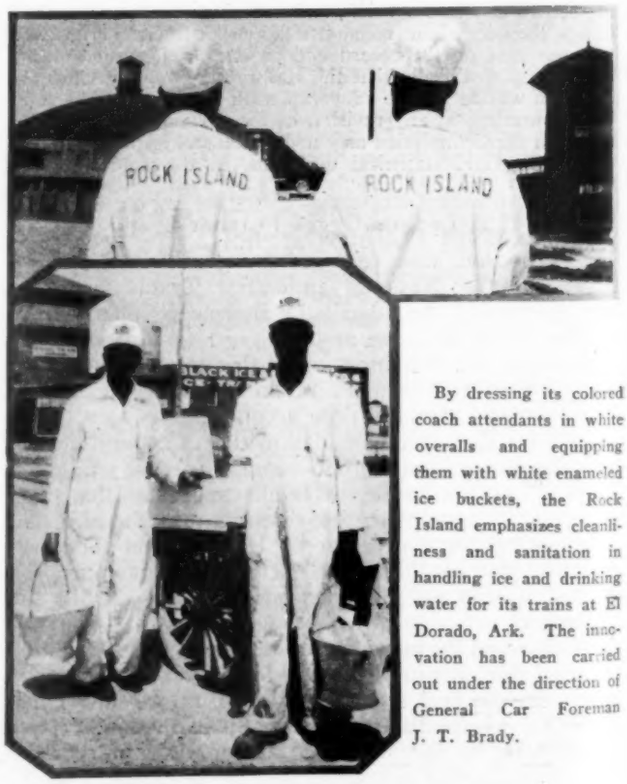
C. H. Woods for the Atchison, Topeka & Santa Fe said that he saw no serious objection to accounting for depreciation on a basis of original cost if it were clearly recognized that the result was a bookkeeping figure only and had no relation to actual depreciation. He urged that if the commission decided to pursue its inquiry into cost accounting, the investigation be placed directly under the commission's supervision and not be left to a committee representing outside interests.

T. W. Reath for the Norfolk & Western said that there was nothing in the law to compel the railroads to assist the Interstate Commerce Commission in determining depreciation rates and that it was unfair to ask them to guess about something which they maintained they could not accurately estimate.

The railroads' presentation in the depreciation case was closed by Sanford Robinson of the Presidents' Conference Committee, who held that the only depreciation in railroad property is deferred maintenance and that, if property is adequately maintained, there is no depreciation. He urged that the railroads and the commission get together on a test case to present to the courts so that a basis for progress in solving the problem might be settled.

The commission also heard arguments on depreciation accounting for telephone properties, in which several municipalities as well as telephone companies, were represented.

* * *



By dressing its colored coach attendants in white overalls and equipping them with white enameled ice buckets, the Rock Island emphasizes cleanliness and sanitation in handling ice and drinking water for its trains at El Dorado, Ark. The innovation has been carried out under the direction of General Car Foreman J. T. Brady.

Chicago, Rock Island & Pacific Car Attendants at El Dorado, Arkansas

*See *Railway Age* of February 12, 1927, page 465.

An Unusual Club Car for the Lehigh Valley

Seating capacity for 46—Car has club, lounge and Pullman sections

A CLUB car of unique interior arrangement, designed to accommodate 46 persons, has recently been released from the Sayre shops of the Lehigh Valley and placed in service between New York and Wilkes-Barre on trains Numbers Two and Three. The car, equipped with six-wheel trucks, is of steel construction throughout. The underframe is of fish-belly type with double body bolsters and deep diaphragms, while the body is of substantial frame construction with deck roof in harmony with the outline features of present passenger equipment. The buffet end, which is of vestibule construction, and the opposite end of the car, of blind construction, embody the anti-telescoping feature.

Interior of the Car Looking Toward the Buffet

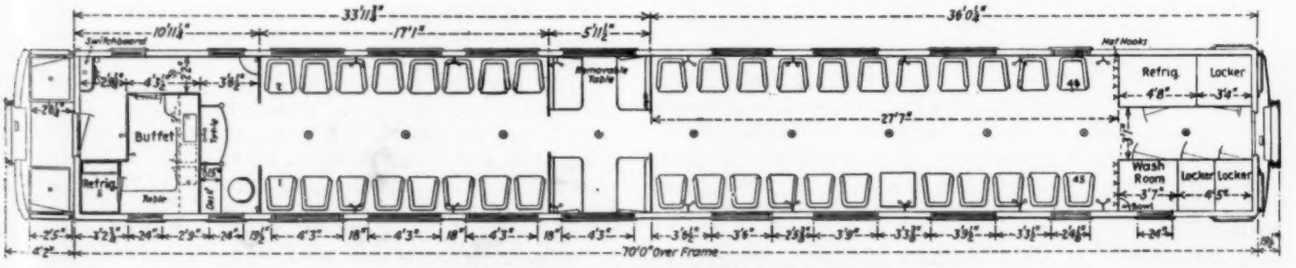
General Interior Arrangement

The interior of the car is finished with steel plate throughout, including the upper and lower decks. The sides and ends are finished in mahogany grain with gold leaf decoration, and the ceiling is ivory white striped with gold and red. The side window curtains are Fabrikoid of silk orange-and-gold lining to conform with the decorations in the car.

Interior of Car Looking Toward the Lounge

At the blind end of the car are located a Monel metal lined refrigerator for carrying supplies on long trips, roomy lockers for storing car equipment and a wash room equipped with Vitralite porcelain washstand. The buffet is at the vestibule end of the car. The refrigerator there is also lined with Monel metal and all shelving and work tables are covered with the same metal.

Two Pullman sections separate the club end of the car from the lounge end. The club section, which is 17 ft. 1 in. long, has a seating capacity of 16 persons;



Floor Plan of the Lehigh Valley Club Car

the Pullman sections, 5 ft. 11½ in. long, accommodate eight; the lounge room, 27 ft. 7 in. long, seats 22, making a total of 46. The chairs are of mahogany with low seats and soft cushions, leather covered in the club section and tapestry upholstered in the lounge section. A writing desk and revolving chair are located in an alcove next to the buffet. A magazine table is provided in the lounge room. The floor is covered with heavy Wilton carpet having a dark background with a light pattern to harmonize with the trimmings of the car.

The Vapor System of steam heat of thermostatic control is employed for properly heating the car. Lighting fixtures finished in No. 7 statuary bronze are used throughout. Center lights are used in the deck and candle brackets in each pier panel.

Willard Says Consolidation Delay Retards Betterments

UNCERTAINTY regarding the outcome of consolidation has had a retarding effect on capital improvements and has been both disappointing and expensive to the railroads, said Daniel Willard, president of the Baltimore & Ohio, in an address before the Manufacturers' Club of Philadelphia, Pa., on December 7. Mr. Willard mentioned specifically some criticism which had arisen at his company's delay in proceeding with terminal improvements in Philadelphia after agreement had been reached with the city authorities as to the nature of these improvements. He pointed out the many details of property purchase, adjustment of conflicting interests, agreement with intra-city transportation lines and the like which had to be cared for. "Our plans are now so far advanced," he continued, "that I hope we may be able to begin actual construction work early next year."

"Our immediate problem," he said further, "has been made more difficult of solution by the uncertainty resulting from the still unsettled status of railroad consolidation as provided for in the Transportation Act. The policy of consolidation of railroads as outlined in the act did not originate with the railroads, nor was it recommended or urged by the railway executives as a whole. The idea originated with Congress itself and the legislation concerning consolidation was enacted from the standpoint of the public interest and not from the narrow or selfish standpoint of the railways.

"While the tentative plan was published in 1921, the Interstate Commerce Commission has not yet published the final plan as required by the act. Please understand that I am not speaking in any spirit of criticism, I am simply stating the facts in order that the situation may be clearly understood.

"Very naturally after the publication of the Commission's tentative plan and in the absence of anything conclusive from the Commission along different lines, the Baltimore & Ohio management has expected that eventually the Baltimore & Ohio, Reading and Central of New Jersey would be brought together in the same group or system, in which event the terminal problems confronting the combined group in Philadelphia would be quite unlike what they are or will be if the combination outlined in the tentative report of the Commission should not become effective. The uncertainty growing out of the situation has made it extremely difficult for the Baltimore & Ohio managers to decide just what ought to be done under existing circumstances. Shall we, for instance, arrange at an expenditure of some millions of dollars so that Baltimore & Ohio passenger trains between Philadelphia and New York can run through the new Huntingdon avenue station on the Reading? Certainly if the lines are to be put in the same system as the Commission has tentatively proposed such a connection would seem to be desirable. If they are not to be operated together, such a connection would probably not be made.

"Again, should the Baltimore & Ohio proceed at once with the development of the shore line property allocated to it under the agreement reached during Mayor Blankenburg's administration, or should it await the outcome of consolidation, in which latter event it may very well appear that the same amount of money necessary to develop the South Philadelphia property might be spent elsewhere in the city and in a way where it would do very much more good?

"If the two properties are to be operated in co-ordination, the latter course would undoubtedly be followed and developments in South Philadelphia might properly be for some time postponed. If the properties are not to be so operated, an entirely different course would be indicated.

"I have referred to these two questions simply by way of illustration. There are many others of a similar character, such as the problem of electrification, the solution of which is awaiting definite action on the part of the Commission in Washington. The delay which has resulted from this uncertainty has been very disappointing and I might also add very expensive to the Baltimore & Ohio in more ways than one."

Mr. Willard then outlined the benefits which he would expect to follow if the Baltimore & Ohio were enabled to acquire a controlling interest in the Reading. The latter company, he said, had splendid terminal facilities in Philadelphia but is limited in its own direct contact with traffic producing centers. "On the other hand, the Baltimore & Ohio," he continued, "with less extensive terminals in the city has over 5,500 miles of line reaching out to the West and Southwest." Mr. Willard said that he had been a member of the Reading board of directors for almost twenty years and, in the event of a closer affiliation of the companies, would hope to have the hearty co-operation of the Reading's organization; the two companies, "working together in mutual and sympathetic co-operation" should be able to provide even higher standards of service than they had in the past.

In conclusion, Mr. Willard again emphasized the retarding effect on capital improvements of delay in reaching a solution to the consolidation problem. "If I have failed to speak," he said, "in such definite terms as might have been expected, I hope you will bear in mind the limitation which I am compelled to observe, due to the uncertainty which still obtains concerning the ultimate outcome of the governmental policy of railroad consolidation."

A "PROPELLER LOCOMOTIVE" has been successfully tried out in Germany, according to an item in the Railway Gazette (London), based on a Reuter despatch from Cologne. The experiments were conducted on the same section of line between Burgwedel and Celle, Hanover, on which Fritz Opel experimented with his rocket car. The "locomotive" is similar in appearance to an armored car, with a propeller at each end driven by two motors, each of 250 hp. The speeds attained were said to compare favorably with those reached by an ordinary steam locomotive.

Development Association Discusses Pertinent Subjects

Meeting at Chicago devoted to agriculture and industry—
Waterways are analyzed at luncheon

THE twenty-first semi-annual meeting of the American Railway Development Association was held at Chicago on December 5 and 6, with an attendance of over 100 representatives of the industrial and agricultural departments of the railroads of the United States and Canada. During the meeting, over which the president, M. C. Burton, general industrial agent of the Atchison, Topeka & Santa Fe, presided, various subjects relating to these departments were given consolidation, while at a luncheon, Samuel O. Dunn, editor of the *Railway Age*, spoke on the effect that the government's policy of developing waterways will have on railway freight business. In addition to these features of the program, a second vice-president and a secretary-treasurer were elected, the former being G. W. Arnold, industrial agent of the Baltimore & Ohio, and the latter A. W. Large, general agricultural agent of the Chicago, Rock Island & Pacific.

Each morning a portion of the time was devoted to a general session at which subjects of interest to both agricultural and industrial men were presented. These included a paper by J. W. Haw, director of agricultural development of the Northern Pacific on the topic, "An Answer to Anti-Reclamation Arguments"; another by R. M. Van Sant, editor of the Baltimore & Ohio magazine, on "Railway Magazine and Development Work"; a third by Frank D. Tomson of Wood Brothers Company, Lincoln, Nebraska, on "The Relators Part in Industrial Development" and a fourth by Dr. Rudolph Clemen, associate director of the livestock bureau of Armour & Co. The latter cited examples of by-products that had been developed to utilize various products for which no demand existed.

Industrial Section Discusses Sidetrack Liability

Industrial sidetrack liability aroused considerable discussion at the Industrial Section session. Some members advocated a uniform side track agreement for all railroads while others favored a variation that would fit the needs of a particular railroad. It was decided that the side track committee should work with the corresponding committee of the American Railway Engineering Association with a view to formulating an agreement that might be used on all railroads.

Another subject that instituted a lengthy discussion was "Community Industrial Development Projects," presented by Howard C. Venn, industrial agent of the Interstate Public Service Company at Indianapolis, Ind. Mr. Venn described industrial surveys and told of the results these surveys have produced.

In the discussion, the members commented on surveys made by chambers of commerce. Some found inaccuracies in the reports, and lack of co-operation on the part of some such bodies in the location of industries while others obtain a large amount of help from them. Other subjects which came before the section were "Terms for the Construction of Temporary Sidetracks for Contractors" and "Conservation of Industrial Real Estate Along Railroads."

Agricultural Section Considers Several Subjects

Among the subjects considered at the Agricultural Section was that presented by E. W. Rusk, agricultural agent of the Chicago Midland at Springfield, Ill., on "Publicity Policies and Methods in Connection with Agricultural Development Projects." Mr. Rusk said that, in a test of the value of radio broadcast over station WENR, Chicago, between 12 noon and 2 p.m., listeners were asked to write to the station giving their location and their interest in the subject of agricultural development, and reported that replies were received from 35 states.

Other topics that were presented included "The Importance and Preparation of Educational Exhibits" by J. W. Hiscox, chief of the division of exhibits of the U. S. Department of Agriculture"; "The Agricultural Development Agent—His Duties, His Aims and His Opportunities," by Mrs. Edith Fullerton, director of agriculture of the Long Island; "Farmer Tours in Co-operation with the Farm Press"; and "International Aspects of Livestock Marketing."

Waterways Developed at Public Expense

Mr. Dunn, in discussing the development of waterways, refuted many of the false arguments used by the sponsors of this form of transportation. His address, in part, follows:

At a time when the national administration is urging the railways to go forward with large expenditures for enlarging and improving their facilities, the question of the extent to which the government is going to aid competing means of transportation to take traffic from the railways is one that cannot reasonably be ignored, because how largely the railways are justified in providing for the handling of future traffic depends upon how much traffic they will probably have to handle.

The prevailing sentiment of the American public unquestionably is in favor of improving rivers and even building canals, because it is believed that this will cheapen transportation. The desirability of waterway development has become so generally accepted that at the recent convention of the Mississippi Valley Association in St. Louis such men as W. R. Dawes, president of that association, Congressman Denison of Illinois and Congressman Hoch of Kansas apparently believed that the only answer necessary to arguments that have been advanced against it was the cry of "railroad propaganda."

When the taxpayers of the United States are being urged to invest hundreds of millions of dollars in waterways, they are entitled to have the advocates of this expenditure advance some better argument in favor of it than a cry the obvious purpose of which is to create public prejudice. I have studied the subject of waterway development for more than 20 years, and throughout this time the arguments usually advanced for it have been a tissue of assumptions, assertions, unfair attacks on railroads and appeals to prejudice that have been wholly unsupported by valid evidence.

The nation has today a system of railroad transportation fully adequate to all its needs, and carrying freight cheaper than it is carried anywhere else in the world. When it is proposed to provide at government expense another means of transportation to carry a large part of the traffic, the burden of proving

that the proposed system of transportation will, differences in service considered, carry freight cheaper than the railways, rests upon those who advocate it. Why, then, when they are challenged for proof, do they answer "railroad propaganda"? Because neither past experience nor data provided by engineering and economic investigations are available which, in any reasonable measure, support the claims of waterway advocates.

Everybody concedes that transportation on the ocean and the Great Lakes is cheaper than by rail. The case of such artificial waterways as improved rivers and canals is an entirely different one. In a recent address General T. Q. Ashburn, chairman of the government's Mississippi river barge line, stated that nearly a billion dollars has been spent by the American public in creating navigable streams and building canals, and that "out of this vast investment the results in the way of completely satisfactory navigable streams have been inordinately small." President Hoover in his recent address at Louisville said that "patchwork" in developing waterways had been "the sink of hundreds of millions of dollars." As it is admitted by such high authority that most of the vast expenditure made in the past has been virtually wasted, is it unreasonable to suggest that very convincing reasons should be given to the public for believing that economic conditions, and also political conditions in Washington, have so changed that the additional huge expenditures for the same purpose now advocated will not also be wasted?

What is meant when it is claimed that development of artificial waterways will "cheapen transportation"? These waterways are developed by increasing the taxes paid by the public for the purpose of reducing the charges for freight transportation. The taxes paid by the public on the investment made in improving waterways, and for subsequently maintaining them, are certainly a part of the cost of providing water transportation. Should not the question be considered as to whether taxes will be increased more than freight charges will be reduced? Although high government officers are among the principal promoters of waterway development, they do not agree regarding this point. The Board of Engineers of the United States Army makes estimates indicating that taxes should be included in the cost of water canal in the United States, excepting the Monongahela river, on which the cost of transportation is as low as it is by rail. On the other hand, General Ashburn says that "propaganda to the effect that the cost of the commercial avenues thus created at public expense" should be included in estimates of the cost of water transportation are "ridiculous." At the same time, he says that the benefits of reduced freight rates should be distributed among those people who pay taxes, but who are not located on the waterways, by compelling the railways to join the water carriers in making reduced freight rates. If the taxes these people pay for providing the waterways largely exceed their savings in freight charges will they not obviously suffer a large net loss, and should not that loss be considered a part of the cost of providing water transportation?

The plain fact is, that most advocates of artificial waterways decline to consider the taxes paid by the public, as well as the freight charges, as a part of the cost of water transportation, because they know that if taxes be included the cost of transportation on practically every artificial waterway in the United States always has been, since the era of railroad transportation began, and probably always will be in future, greater than railway rates for similar service.

The claim is made that waterways will be supplementary to, not competitive with, the railways, and therefore will not hurt the railways by taking traffic from them. There is no foundation in experience or reason for this claim. If waterways are successfully developed they will directly compete with the railways and take traffic that otherwise would be handled by rail. The indirect result will be to make railway rates higher than they otherwise would be, because the larger is the volume of a railway's traffic the more economically it can handle each part of it. The development of motor transportation on the highways has reduced railway passenger earnings $400,000,000 a year since 1920. The loss of those earnings has been an important factor in making necessary the maintenance of the existing railway rates, and diversion of traffic to waterways will have similar effects. On the other hand, if the waterways do not take a very large amount of traffic that otherwise would be handled by rail, the public money spent upon them will be wasted.

It is claimed that artificial waterways will be needed to help handle traffic in future because the railways cannot be sufficiently expanded for that purpose. Experience shows there is no limit to the extent to which the capacity of railways can be expanded if they are allowed to earn returns sufficient to raise the necessary capital.

It is claimed that artificial waterways should be developed to "relieve" the railways of their more bulky traffic which must be handled at low rates. The fact is, that because of its heavier loading per car this bulky traffic is more profitable to many railways than their higher class traffic, and that, therefore, its diversion from them would have a very adverse effect upon their earnings and the service they could render.

It is even said that many railway officers are in favor of waterway development because they believe it will help the railways. If any responsible officer of a railway has expressed any such view within recent years, I have never heard of it.

Ninety-five per cent of all the traffic now handled on the Ohio river system, the completion of which was recently celebrated, is handled by large corporations for themselves in their own boats, which are not common carriers available for the service of the public. When the cry of "railroad propaganda" is raised to create public prejudice it seems appropriate to raise a question as to whether these big corporations charge the public lower prices for the freight they ship by water than for the freight they ship by rail, and, if not, whether it is the public or these big corporations that are actually getting the benefit of the expenditures made by taxpayers throughout the country upon the improvement of the Ohio river system. It is high time that we should get the discussion of inland waterways on a basis of valid evidence instead of unsupported assumptions; of facts, instead of anti-railroad propaganda; of economic demonstration regarding the welfare of the public, instead of appeals to prejudice intended to influence the public taxpayer to assume a large part of the cost of transportation which should be paid by those for whom freight is actually carried.

Fireproofing the Railroad

By R. R. Houpt

District Forester, Pennsylvania Department of Forests and Waters

A LARGE percentage of the 177,362 forest fires that damaged about $82,934,220 worth of property in the United States during 1928 started from the railroads. Several million dollars worth of timber and other property is destroyed every year by fires which start along railroad rights of way. In Pennsylvania, the railways cause about 30 per cent of the total number of fires, while in some districts of the state, more than 50 per cent of the fires are railroad fires. In the five-year period between 1922 and 1927, the railroads in Pennsylvania started about 4,416 forest fires that burned over 290,652 acres. These fires damaged approximately $641,000 worth of property and cost the state $35,848.39 to extinguish.

Within recent years, the problem of preventing railroad fires has been given serious consideration by both railroad and forestry officers and they have co-operated actively in an effort to prevent railroad fires. As early as 1908 the Pennsylvania Department of Forestry recommended the burning or clearing of safety strips along railroad rights of way in certain localities. This method, however, was not used very much until several years later. In 1921, while many miles of safety strip were burned, the movement to develop safety strips along Pennsylvania railroads was still in its infancy. Since that time, however, safety strips have been burned extensively and wherever effective strips have been established good results have followed.

If a strip from 100 to 150 ft. from the outside rail of the track is cleared of leaf litter and other inflammable debris, it will prevent a very large percentage of the engine sparks from starting fires. A spark from a locomotive that falls beyond that limit seldom carries heat enough to start a fire.

In preparing an effective safety strip, the surface along the outer edge of the strip should be cleared of

all brush and other inflammable debris to a width of four feet before any burning is done. This will tend to prevent the spread of fire at the time the safety strip is burned. If all growth up to a diameter of three inches at the ground is removed, the area can be more readily cleared and will be easier to clean prior to burning periods. When the four foot strip at the outer edge has been prepared, a two-foot path should be raked clean to bare soil through the center of it just before burning. The burning should be started at the bare soil path and proceed toward the track. After several burnings most of the debris, which is probably an accumulation of several years or more, will be consumed and the only debris to contend with thereafter will be what accumulates between the regular burning periods.

In some sections forest wardens or inspectors are available to supervise the work. The best results are

A Crew Planting Trees Adjacent to a Railroad

obtained when the burning of safety strips is not regarded by railroad men as extra work, but a part of regular track maintenance.

The cost of burning varies so much that no definite figure can be given. Cutting and raking the line, and removing the accumulation of debris make the first burning much more expensive than any subsequent burning. Some foresters think that $30 to $50 per mile may be considered an average cost for the first burning, but this will be lower or higher for particularly good or bad conditions.

In Pennsylvania there are between 11,000 and 12,000 miles of standard gage railroad right of way. Forestry and railroad representatives have inspected many miles of this right of way that pass through woodland and have charted the hazards. In 1927, 1244 railroad hazards were investigated in Pennsylvania. Hazard charts are prepared by the Department of Forests and Waters, and copies forwarded to railroad officers to use as the basis of their safety strip burning. Railroad track charts are used whenever they are available and if they are not obtainable, straight line track charts, showing stations and mile posts if the latter are marked on the ground, are prepared. A description of each hazard is also recorded on a hazard report sheet.

Under some conditions patroling may be more effective and less expensive than safety strip burning. On roads where only a few trains a day are operated and there are long stretches of hazards, the patrol method usually produces satisfactory results. It is cheaper and has the advantage of protecting the entire line instead of just a part of it. On every fire day, patrolmen follow each train, about 15 or 30 minutes after the train has passed, on a speeder. They are equipped with spray tanks, rakes and buckets, so they can extinguish any fire along the right of way while it is still small. Incidentally, patrolmen may discover tie piles that section crews have left burning along the track. These burning tie piles frequently start large fires in adjoining woodland.

In Pennsylvania a large number of section foremen have been appointed special forest fire wardens by the Commonwealth and instructed by the railroad to extinguish all forest fires on or along the right of way and make written reports for the railroad supervisor and district forester in their locality.

Past experience has proved that burning safety strips and having patrolmen follow trains on fire days are the two most effective methods of fire control, assuming that engines are constantly inspected and spark arresters and ash pans are kept in first-class condition during fire seasons.

Another method which is still in the experimental stage in Pennsylvania, is that of planting trees along the right of way. In Europe some of the railroads are bordered by trees which are there primarily to stop the flight of sparks thrown from an engine. Since 1925 when the first safety strip planting was made in Pennsylvania, 104,200 coniferous seedlings have been planted along the railroads of this state. These plantings which are located in six different forest districts, are being watched with interest by forestry and railroad officers.

The largest of these safety strip plantings was made in the Cornplanter Forest District in the spring of 1929 along the Baltimore and Ohio. The railroad, the U. S. Forest Service and the Pennsylvania Department of Forests and Waters co-operated in establishing this planting to prevent forest fires.

Fifty thousand pine seedlings were planted along nearly a mile of hazardous right of way near Marienville, Forest County, Pennsylvania. Three-year old seedlings, grown in state nurseries, were furnished by the Pennsylvania Department of Forests and Waters; and railroad, state and federal crews united in planting them. On the east side of the railroad, about 20 ft. from the center of the track, a strip 100 ft. wide was planted with seedlings, spaced 3 ft. by 3 ft.

Close spacing was used so the branches would intersperse in a few years and make a complete cover over the ground. By the time a spark sifts through a thick network of pine needles, it will lose its fire and heat. The closely planted pines will soon form a screen for engine sparks and an evergreen canopy which will tend to smother out briars, bracken, and other inflammable material. Also, the moist ground cover beneath the pines will be less likely to burn than the dry grass and leaves on the ordinary right of way.

The result of this safety belt along the B. & O. will be watched with interest as an experimental project in the prevention of railroad fires. It is hoped that the planting of evergreen trees will prove another effective way to maintain a safe right of way and preserve many acres of beautiful woodland along the railroads.

PARKING SPACE FOR AUTOMOBILES is to be provided in the future by the London & North Eastern at all possible stations, as another step toward overcoming the private automobile competition to which British railways have been subjected. A charge of one shilling (about 25 cents) a day is to be made for motor cars, which will be left at the owner's risk, though under the observation of the station staff. The parking privileges will not be open to commercial motor vehicles of any type.

National Business Survey Conference

Plans made for expansion of construction and maintenance work

WASHINGTON, D. C.

NEARLY 400 business executives, most of them officers of national organizations, attended the national business survey conference of December 5 called by the Chamber of Commerce of the United States at the request of President Hoover. The purpose, as he defined it, was "to create a temporary organization for the purpose of systematically spreading into industry as a whole the measures which have been taken by some of our leading industries to counteract the effect of the recent panic in the stock market," and particularly to carry out his theory of using the expansion of construction and maintenance work as a "balance wheel" to "take up any slack in employment which arises in other directions."

To carry out this purpose the conference, after hearing reports, mostly of an encouraging nature, from spokesmen for 32 basic industrial and trade groups, authorized the appointment by the chairman, Julius H. Barnes, chairman of the board of the national chamber, of an executive committee "to assist in the general situation in such ways as may be needed." It is understood that this committee will obtain and collate more detailed reports and attempt to devise measures to eradicate whatever weaknesses in the national economic structure they may reveal. In announcing the meeting the national chamber had referred to the possibility of creating a "continuing" organization but the President, both in his opening address and since, has continued to emphasize that what he had in mind was to be purely temporary.

Hoover Calls Construction Work a Balance Wheel

The President, in an opening address to the conference, said that the stock market break had created a situation of "undue pessimism, fear, uncertainty and hesitation in business" which must be cured with action rather than words. After referring to the "smooth and rapid return to the channels of business of the money previously absorbed in the speculative market" and the assurances given him by employers and labor leaders he said:

"The third line of action has been to undertake, through the voluntary organization of industry, the continuity and expansion of the construction and maintenance work of the country, so as to take up any slack in employment which arises in other directions. The extension and organization of this work are the purpose of this meeting. The greatest tool which our economic system affords for the establishment of stability is the construction and maintenance work, the improvements and betterments, and general clean-up of plants in preparation for cheaper production and the increased demand of the future.

"It has long been agreed by both business men and economists that this great field of expenditure could, by its acceleration in time of need, be made into a great balance wheel of stability. It is agreed that its temporary speeding up to absorb otherwise idle labor brings great subsequent benefits and no liabilities.

"A very considerable part of our wage earners are employed directly and indirectly in construction and the preparation and transportation of its materials. In the inevitable periods when the demand for consumable goods increases and labor is fully employed, the construction and maintenance can slacken and we actually again gain in stability.

"No one would advocate the production of consumable goods beyond the daily demand; that in itself only stirs up future difficulty.

"I am glad to report that such a program has met with universal approval of all those in responsible positions. Our railways and utilities and many of our larger manufacturers have shown a most distinguished spirit in undertaking to maintain and even to expand their construction and betterment programs. The state, county and municipal governments are responding in the most gratifying way to the requests to cooperate with the federal government in every prudent expansion of public works.

"Much construction work had been postponed during the past few months by reason of the shortage of mortgage money due to the diversion of capital to speculative purposes, which should soon be released. It is to make this movement systematic in all branches of the industrial world that we are here—that is the task.

"I believe that with the great back logs which are already assured by the public service institutions and the governmental works you will be able to build up the construction and maintenance activities for 1930 to a higher level than that of 1929, and that is what we require."

Chairman Barnes, in his opening statement, also expounded this theory, saying in part:

"Manifestly, commodities produced in surplus beyond the current market would shortly choke the avenues of trade by burdensome inventories. But new construction and the maintenance of plant and equipment require only a confident faith in the future continued growth of American industry. The stimulative effect of sustained construction would reach almost the whole gamut of other industry. If construction and maintenance can thus take up any slack in general business activity, we can hope to maintain even against untoward circumstances the level of business stability.

"There may be places in the flow of the business stream in which circumstances or inattention may present the menace of a dam forming in the current of that stream but we believe highly trained experience and energy within organized industry may in such event locate the key-log and by joint effort release the jam so that the current of American business resumes its even flow."

The chamber plans to put its extensive organization in the service of follow up work. It is now analyzing the many reports and statements filed by all the industries as to their present position and their prospects.

Secretary Lamont Urges Normal Buying

The Secretary of Commerce, R. P. Lamont, said that the fear which followed the market break has been replaced by confidence and that the most important single

thing that can be done now is for each one of us to continue normal reasonable buying. Our people, generally, are now convinced of the essential soundness of our economic structure and of our economic future, immediate as well as remote," he said. "It is our job now to justify that confidence and maintain it until such time as the normally constructive and healing forces of industry shall have repaired what damage has been done and the country is again going forward at its normal steady pace.

"Thanks to our banking system, we have come through one of the most colossal shifts in credit in our history without apparent strain: Interest rates are low and tending lower. This will create a bond market and make possible the financing of construction work of various kinds which has been slackening for some months. The general level of commodity prices is four or five points below that of the close of 1928. Many prices carry small profits. There should be no hesitation about buying at these levels.

"Generally speaking, our Census Bureau statistics for the entire country and for all important commodities—but not including automobiles—show inventories lower than a year ago. We are, therefore, not confronted with the cancellations and with the shrinkages of high-priced stocks and the enormous losses of 1920-21.

"It has been obvious for some time that all was not well in our economic structure. The outstanding difficulty, of course, was the excessive amount of available credit absorbed for speculative purposes. It was not so evident, but it now seems possible that in certain other respects there was a growing loss of that balance between some of the elements in our industrial life that seem to be essential to a normal healthy growth—as was so clearly pointed out in the report of the committee on recent economic changes, as of February this year.

"The industries which have overbuilt may have to move forward for a time at a somewhat reduced speed, until demand catches up with supply; but the normal average growth of the country should soon correct this out-of-balance condition.

"In the meantime we should actively continue all other industries—all construction, maintenance and replacement work and find what other sources of employment are available to take up the slack that may result from this temporary condition.

"Our corporations were never stronger financially than they are now—this is a good time to go ahead with such work. It is economically justified, because it makes for better working conditions, helps to reduce cost and maintenance; it will keep more men employed in the community where they live and keep up the buying power.

"Under present conditions, there is no more wisdom in unnecessarily curtailing buying than there would be in producing and piling up products for which there is no market.

"The buying of equipment and supplies and other construction work by the railroads, public utilities, etc., promises to be an important factor in the immediate future and probably for all of 1930. During the period since the war, corresponding to that of the most rapid development of the automotive industry, the railroads have had to meet the problem of reducing expenses in the face of serious losses in passenger traffic and in short-haul freight.

"In spite of these difficulties, the management of the railroads have brought their properties into the most prosperous condition in their history by improvements in operating methods and equipment and by reduction of maintenance expenses due to better structures and machines. There is more of this replacement of obsolete structures and equipment to be done and the railroad managements have declared their purpose to go forward with their programs."

The all-day and evening session was devoted to statements from the spokesmen of the various groups as to conditions in their respective industries, including, in many instances, a canvass of their capital programs for 1930 and the next six months. In the main these statements confirmed the earlier impressions given at the series of conferences at the White House, that business is proceeding for the most part in an orderly way, and the general tone was most optimistic.

Large Capital Programs Expected

The first of these statements was that of R. H. Aishton, chairman of the executive committee of the Association of Railway Executives, showing that 164 Class I railways have prepared budgets of capital expenditures for 1930 aggregating $1,050,000,000, published in last week's issue. Mr. Aishton emphasized that this represented that the railways had recorded themselves individually through their chief executives. He added that he was authorized by the Pullman Company to say that its capital expenditure program for 1930 will amount to $11,930,000 for equipment and that the program of the Railway Express Agency will amount to $6,000,000.

Frank W. Noxon, secretary of the Railway Business Association submitted a statement estimating the expenditures of the industries represented by the association for the first six months of 1930 at $830,402,053, an increase of 2.8 per cent as compared with those for the first half of 1929. The statement follows:

The members of the Railway Business Association making this return sell their product to railroads, to one another and to others. The report covers their whole business. It includes a wide variety of machinery, materials, supplies and equipment specialties and completed locomotives but excepts repair shops and completed cars, which we were informed would be dealt with in another report. For the same reason we omit steel rail. Undoubtedly our report, covering a heterogeneous group, duplicates to some extent the reports from homogeneous industries, but not more than three or four members have mentioned to us such double reporting.

A considerable part of the replies forecast declines. These are incorporated as they came and the composite is believed to be sufficiently representative to warrant projecting the estimates upon whole groups where it is known what percentage of the whole output is produced by those reporting.

The figures are intended to show the dollars that flow from these industries into trade. The items are:

Compensation to employees.
Expenditures for material, fuel, supplies and freights.
Expenditures for plant enlargement and improvements.

The grand totals are as follows:

Actual, 12 months	1928	$1,484,151,264
Actual and estimated, 12 months	1929	1,762,125,145
Increase		18.8 per cent
Actual, 1st six months	1929	807,950,593
Estimated, 1st six months	1930	830,402,053
Increase		2.8 per cent

Members were asked this question: "What contingent factors will offset the accuracy of forecast for the first six months 1930?" Practically all replied: "The ability and determination of the railways to maintain their budgets."

Matthew S. Sloan, president of the National Electric

Light Association, said that the electric light and power, gas and electric railway companies will spend $1,400,000,000 during 1930 for new construction, an increase of $110,000,000 over 1929. In addition they will spend for maintenance $410,000,000.

James A. Farrell, president of the United States Steel Corporation and chairman of the board of the American Iron and Steel Institute, said the steel industry has had a profitable year and that the earnings will enable manufacturers to make improvements long deferred. Expenditures already authorized and definitely planned approximate $500,000,000 including $300,000,000 for one company. The steel industry expects a "good, average year in 1930."

Alvan Macauley, president of the National Automobile Chamber of Commerce, said that "taken generally, the industry is in a most wholesome and healthful condition."

Frank H. Smith, president of the Portland Cement Association, said that according to information gathered prior to President Hoover's announcement of the compaign to stimulate business, the outlook for 1930 anticipated cement shipments possibly 5 to 10 percent below those of 1929.

R. C. Marshall, speaking for the Associated General Contractors of America, said that while the volume of contracts let in 1929 is some 18 per cent less than in 1928 the fact that money is flowing back into investment channels is stimulating the demand, particularly for residential construction.

C. L. Collins, president of the National Electrical Manufacturers Association, said that 178 leading executives in the association expect a decrease in productive activity of only about 3½ per cent in the first six months of 1930 as compared with 1929.

Presidents of the three large farm organizations said that "a new confidence for the future is already apparent among the farmers, based upon the present places for agriculture."

A general advisory committee of 72 was appointed by Chairman Barnes and was expected to hold an evening meeting with him to consider the selection of the executive committee, but the meeting was not held because the general program ran until 10:00 p.m.

In concluding the meeting Mr. Barnes said:

"I think we ought to avoid a feeling of excessive optimism, but it does seem to me in all good faith that we have ample evidence here today of a speedy recovery from whatever recession has taken place in business. Conditions in the country have been changed in the past few weeks. The recent difficulty in the securities market has passed into the dim distance of the past. American business has recovered its spirit, its activity, its enterprise."

The following, prominently connected with the railway and railway supply industry, in addition to Mr. Aishton and Mr. Noxon, were registered as being present at the conference: Daniel Willard, president, Baltimore & Ohio; L. W. Baldwin, president, Missouri Pacific; E. G. Buckland, chairman, New York, New Haven & Hartford; E. S. Jouett, vice-president, Louisville & Nashville; Dr. Julius H. Parmelee, director, Bureau of Railway Economics; J. A. Farrell, president, United States Steel Corporation; J. F. MacEnulty, vice-president, Pressed Steel Car Company; W. W. Salmon, president, General Railway Signal Company; Col. E. A. Simmons, president, Simmons-Boardman Publishing Company.

Messrs. Aishton and Farrell, and Alba B. Johnson, president of the Railway Business Association, were appointed members of the general committee announced by Mr. Barnes.

Annual Safety Bureau Report

SUPPLEMENTING the forty-third annual report of the Interstate Commerce Commission (noticed in the *Railway Age* of December 7) that body has issued separately the report of the director of the Bureau of Safety. This is a pamphlet of 90 pages, with which there is presented also ten pages of extracts from the report of the commission proper.

The Bureau of Safety inspected, in the year ending June 30, 1929, a total of 1,443,366 freight cars and the usual proportions of passengers cars and locomotives. The percentages found defective were: freight cars 2.42; passenger cars 1.47; locomotives 1.88. The condition of safety appliance equipment is the best it ever has been, but there are still some infractions of the law and from time to time individual roads are prosecuted.

Under the hours-of-service law, the number of cases of excess service reported during the year was 22,941, an increase of 2200 over the preceding year.

The report contains the usual appendices relative to the inspection of cars and locomotives, and details of the hours of service reports are issued in a separate bulletin. Many roads are still following the objectionable practice of releasing train service employees from duty at the terminals and other points for short periods of time and construing such periods as time off duty, thus defeating the intent of the law.

The report gives a full and complete account of the doings of the Bureau in relation to automatic train control, with tables showing mileage, etc., on each road; number of locomotives equipped for operation on foreign roads; a summary showing proprietors and types of devices; percentages operated under different systems of apparatus and the total of each of the four types—continuous induction, intermittent induction, magnetic induction and intermittent electrical contact. Other tables show installations of automatic train control made voluntarily by eight different roads; false-clear train control failures (September 1, 1928, to August 31, 1929). This list shows 13 failures.

Another table shows installations of various kinds for the improvement of safety, including not only automatic train control and cab signals but block signals, interlocking, derails, spring switches, remote power switches and other items; and, supplementary to this, a table of statements furnished by the railroads showing total expenditures in this field. These amount to 195 million dollars for the year ending December 31, 1928. Six roads have made additions to automatic train control installations since the completion of the apparatus on mileage prescribed by the government.

Investigations of 67 collisions and 31 derailments are summarized in the usual manner, and an appendix gives the date, location and other data concerning each.

An appendix of 18 pages is devoted to the extensive investigation of power brakes which the Bureau has carried on in cooperation with the A.R.A.

The number of accidents at highway crossings in the calendar year 1928 was 5,800 which resulted in the death of 2,568 persons and the injury of 6,666. Automobiles figured in 5046 of these accidents, 2165 persons being killed and 2,618 injured. During 1928 there were 50 derailments of trains as the result of collisions with automobiles, causing the death of 22 persons and the injury of 47. The President, acting under the law of 1905, administered by the commission, awarded three medals of honor for heroism in the year ending June 30, 1929. Altogether, 32 medals have been awarded.

Annual Report of Bureau of Locomotive Inspection

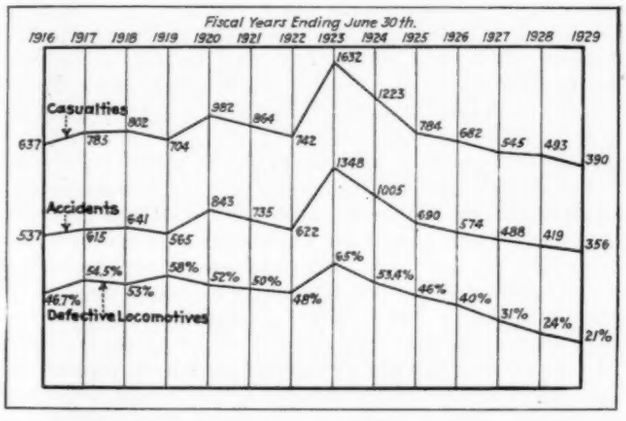
Defective locomotives continue to decline—Fatalities decrease 36.6 per cent from previous year

THE eighteenth annual report of the Bureau of Locomotive Inspection to the Interstate Commerce Commission shows a continuation of the marked and gradual decline in the number of locomotives found defective and ordered withheld from service. For instance, in 1924 there were 67,507 locomotives inspected, of which 36,098 were found defective and 5,764 were ordered withheld from service while in 1929 a total of 96,465 locomotives were inspected out of which 20,185 were found defective and 1,490 ordered withheld from service. This decline is from 53 per cent in 1924 to 21 per cent in 1929, the lowest figure yet recorded. The number of accidents and casualties caused by the failure of locomotive parts was reduced to the lowest figure yet reported, with 356 accidents resulting in 19 deaths and 390 injuries.

A further study of the report shows the trend of the general condition of locomotives throughout the country. For instance, during the year 21 per cent of the locomotives inspected were found with defects that should have been corrected before they were put into service, as compared with 24 per cent for the fiscal year ended June 30, 1928, 31 per cent for the year 1927, 40 per cent for the year 1926, 46 per cent for the year 1925 and 53 per cent for the year 1924, when there were 1,005 accidents resulting in the death of 66 persons and the serious injury of 1,157 others, as compared with 356 accidents in the fiscal year, resulting in the death of 19 persons and serious injury of 390 others.

Defective reverse gears and squirt hoses were the cause of the greatest number of accidents during the year covered by the report. The 23 accidents attributed to each of these causes resulted in the injury of 46 persons. As in preceding years, defective reverse gears, squirt hoses, grate shakers, water glasses, main and side rods, handholds, brakes and brake rigging were the most prolific sources of accidents. Crown sheet failures due to low water continue to be the cause of the greatest number of fatal accidents. In the year ending 1925, 22 accidents were attributed to this cause resulting in 10 of the 20 deaths of the year. In 1926, 22 persons were killed, 17 of whom met death in this type of accident, and again in the year ending 1927, 17 deaths out of a total of 28 were on account of crown sheet failures. Twenty persons were killed by boiler explosions in 1928 when there were 30 deaths and in the fiscal year 17 of 19 deaths were attributed to this cause.

A summary of all accidents and casualties to persons occurring in connection with steam locomotives, compared with the previous year, shows a decrease of 15 per cent in accidents, a decrease of 36.6 per cent in persons killed and 15.8 per cent in persons injured.



The Relation of Defective Steam Locomotives to Accidents and Casualties Resulting from Locomotive Failures

As in the fifteenth, sixteenth and seventeenth reports, attention was called to the danger resulting from the use of reduced body staybolts having telltale holes which do not extend into the reduced section at least 5/8 in. Accidents resulting in serious and fatal injuries continue to occur with this type of bolt because of the telltale holes not being of sufficient depth.

As in former years boiler explosions caused by crown

Number of Persons Killed and Injured in Steam Locomotive Accidents

	1929		1928		1927		1926		1925		1924	
	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
Members of train crews:												
Engineers	7	128	8	151	8	181	5	210	8	230	19	330
Firemen	7	128	11	161	9	179	6	230	6	300	22	434
Brakemen	1	45	4	54	4	51	3	77	2	84	9	102
Conductors	..	24	..	16	..	25	2	28	..	25	2	39
Switchmen	1	11	..	15	1	13	..	19	..	23	1	29
Roundhouse and shop employees:												
Boiler makers	..	5	3	5	..	11	..	5	..	6	1	24
Machinists	..	2	2	4	1	5	..	5	..	13	1	9
Foremen	..	1	..	1	..	1	..	3	..	..	1	6
Inspectors	..	1	..	1	..	..	..	..	..	2	1	3
Watchmen	..	3	1	2	2	4	1	5	1	3	..	5
Boiler washers	..	1	..	..	1	2	..	2	..	5	2	5
Hostlers	..	5	..	10	1	7	..	9	..	16	..	14
Other roundhouse and shop employees	1	3	..	8	..	10	1	15	..	10	6	34
Other employees	2	10	..	12	1	9	3	10	1	13	..	16
Nonemployees	..	23	1	23	..	19	1	42	2	34	1	107
Total	19	390	30	463	28	517	22	660	20	764	66	1,157

sheet failures were the most prolific source of fatal accidents. Sixty-eight per cent of the fatalities during the year were attributable to this cause as compared with 67 per cent in the previous year. However, there was a decrease of 18 per cent in the number of such accidents, 35 per cent decrease in the number killed, and 15 per cent decrease in the number injured as compared with the previous year; and 68 per cent decrease in the number of such accidents, 68 per cent decrease in the number killed, and 74 per cent decrease in the number injured as compared with the year 1923.

Accidents and Casualties Caused by Failure of Some Part of the Steam Locomotive, Including Boiler, or Tender

	Year ended June 30					
	1929	1928	1927	1926	1925	1924
Number of accidents	356	419	488	574	690	1,005
Per cent increase or decrease from previous year	15	14.1	14.9	16.8	31.3	25.5
Number of persons killed	19	30	28	22	20	66
Per cent increase or decrease from previous year	36.6	[1] 7.1	[1] 27.3	[1] 10	69.7	8.3
Number of persons injured	390	463	517	660	764	1,157
Per cent increase or decrease from previous year	15.8	10.4	21.6	13.6	33.9	25

[1] Increase.

Careful study of the reports of investigations of boiler explosions caused by crown sheet failures as a result of low water indicates that the reduction in the number of such accidents has been largely, if not entirely, brought about through better maintenance, better water-indicating appliances, visibility of water glasses, proper and accessible location of gage cocks, and better and more dependable feedwater appliances.

Four suits for penalties, involving 32 counts for alleged violations of the Locomotive Inspection Law and Rules, were pending in the various district courts at the beginning of the year. Information of violations was lodged with the proper United States attorneys in 14 cases, involving 264 counts. Judgments in favor of the Government were obtained in seven cases, involving 55 counts; four counts were dismissed by stipulation or agreement and penalties imposed on 51 counts in the sum of $5,100. There were no adverse decisions of courts. Eleven cases, involving 241 counts, were pending in the district courts at the end of the year.

Longer Credit Period for Freight Bills Is Opposed

WASHINGTON, D. C.

IT would serve no good purpose for the Interstate Commerce Commission to clothe the carriers with power to extend the credit period for the payment of freight charges beyond the 96 hours now permitted by the commission's regulations. This is the finding of Examiner Charles W. Berry in a proposed report made public on December 7 in Ex Parte 73, in which the National Industrial Traffic League and various shippers had petitioned the commission for an extension of the maximum time now permitted.

Examiner Berry pointed out that the commission has no authority to require the carriers to grant any credit and he based his opinion that the permissive period should not be extended on the opposition of the carriers and their contentions "that the present rules are workable and enforceable, just to both shippers and carriers, that they assist the carriers in avoiding discrimination between shippers and in the collection of freight charges, and reduce to a minimum losses due to failure to pay, and the fact that an extension of the credit period would require a large additional working capital." In the circumstances, he says, an extension of the period contrary to the wishes of the carriers "may subject them to threats of or actual diversion of traffic by shippers and lead to unfair competition between carriers and unjust discrimination between shippers."

He recommends, however, an extension of time for the collection of undercharges and a change in the time for the beginning of the credit period to the first midnight following the presentation of the freight bill. After a careful review of the testimony given at the hearings on the petition Examiner Berry recommends that the present rules be modified as follows:

The carrier, upon taking precautions deemed by it to be sufficient to assure payment of the traffic charges within the credit period herein specified, may relinquish possession of freight in advance of the payment of the tariff charges thereon and may extend credit in the amount of such charges, to those who undertake to pay such charges, such persons herein being called shippers, for a period of 48 hours computed as hereinafter set forth.

Where retention of possession of freight by the carrier until the tariff rates and charges thereon have been paid will retard prompt delivery or will retard prompt release of equipment or station facilities, the carrier, upon taking precautions deemed by it to be sufficient to assure payment of the tariff charges within the credit period herein specified, may relinquish possession of the freight in advance of the payment of the tariff charges thereon and may extend credit in the amount of such charges to shippers for a period of 96 hours to be computed as hereinafter set forth.

Where carriers have relinquished possession of freight and collected the amount of tariff charges represented in a freight bill presented by them as the total amount of such charges and another freight bill for additional charges is thereafter presented to the shipper, the carrier may extend credit in the amount of such additional charges for a period of 240 hours, to be computed as hereinafter set forth, from the date of the presentation of the subsequently presented freight bill.

Where the freight bill is presented to the shipper prior to or at the time of delivery of the freight, the 48, 96, and 240-hour periods of credit shall run from the first 12 o'clock midnight following the delivery of the freight.

Where the freight bill is presented to the shipper subsequent to the time the freight is delivered, the 48, 96, and 240-hour periods of credit shall run from the first 12 o'clock midnight following the presentation of the freight bill.

Every carrier shall present freight bills to shippers prior to the first 12 o'clock midnight following delivery of the freight, except that when information sufficient to enable the carrier to compute the tariff charges is not then available to the carrier at the delivery point, the freight bills shall be presented not later than the first 12 o'clock midnight following the day upon which sufficient information becomes available to the delivering agent of the carrier.

Shippers may elect to have their freight bills presented by means of the United States mails, and when the mail service is so used the time of mailing by the carrier shall be deemed to be the time of presentation of the bills. In case of dispute as to the time of mailing the post mark shall be accepted as showing such time.

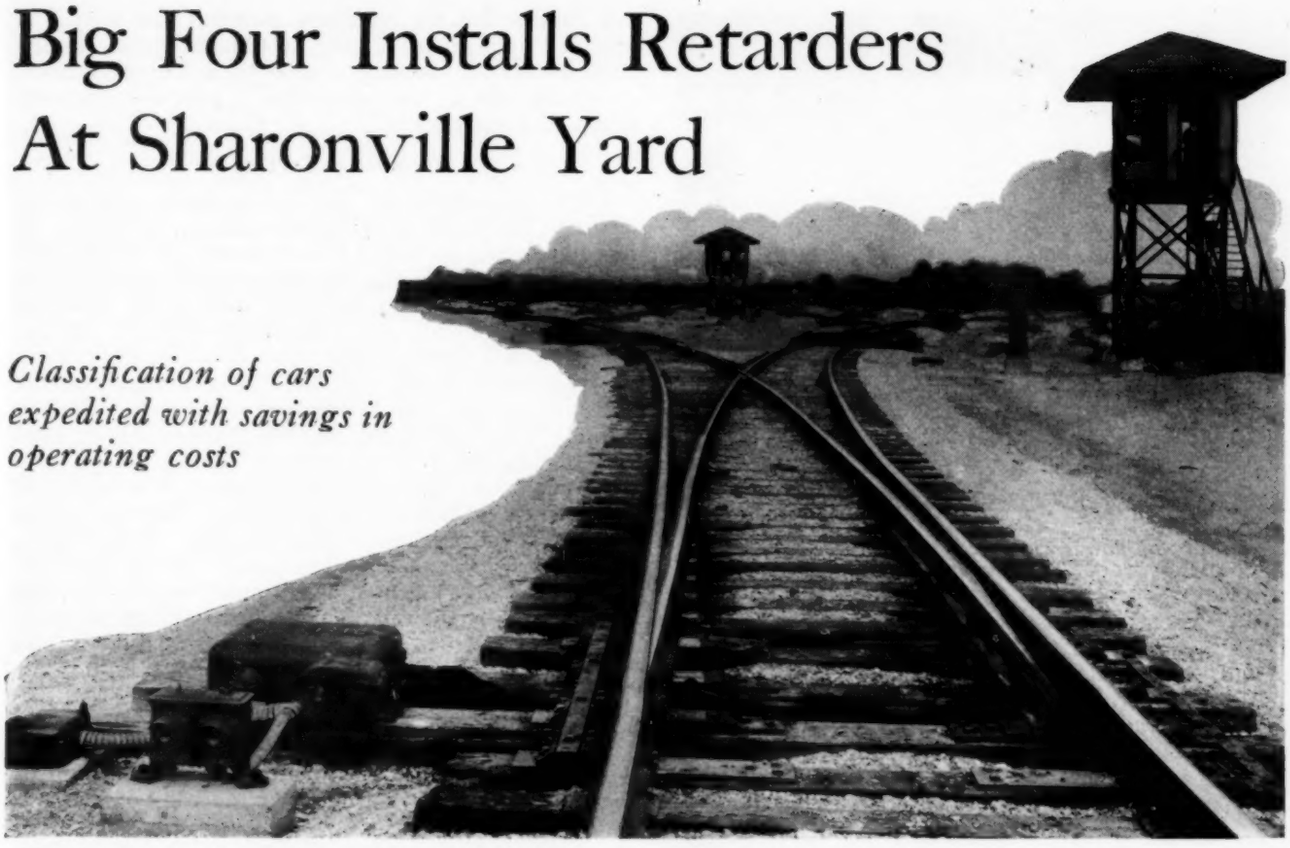
Sundays and legal holidays, other than Saturday half holidays, may be excluded from the computation of the periods of credit.

The mailing by the shipper of valid checks, drafts, or money orders, which are satisfactory to the carrier in payment of the tariff charges within the period of credit prescribed above, may be deemed to be payment of the tariff charges within the periods of credit. In case of dispute as to the time of mailing, the post mark shall be accepted as showing such time.

DURING THE PRESENT MONTH, representatives, in most cases high executives, of the major railways of South America are meeting in Santiago (Chile) for the Third South American Congress of Railways. The delegates to the Congress, who will also be guests of the Exposition of Railways, Roads and Touring now being conducted by the Chilean government, will discuss common management and operating problems and will make a thorough inspection of the facilities of the Chilean Government railways.

Big Four Installs Retarders At Sharonville Yard

Classification of cars expedited with savings in operating costs



View Looking South at the First Switch, Tower 1 at Right

THE inbound classification yard of the Cleveland, Cincinnati, Chicago & St. Louis at Sharonville, Ohio, near Cincinnati, has recently been rebuilt, in connection with which the Union Switch & Signal Company's electro-pneumatic car retarder system was installed. A new hump was built about 200 ft. west of the old one, with new leads so constructed as to connect up with the old yard tracks and form straight yard tracks, whereas the old yard was on a curve. This yard now has 30 tracks with a total capacity of 1,654 cars, and when one more track is added on each side, the capacity will be increased to 1,744 cars. An eight-track receiving yard with a total capacity of 977 cars is located north of the hump. An additional caboose track with a capacity for 10 cars forms a part of this yard.

Approximately 1,150 cars are classified in this yard daily, including merchandise and manufactured products for Cincinnati and for connecting roads to the south, as well as a great many empty coal cars for these southern connecting lines.

Arrangement of Retarders

The 30 tracks are arranged in groups of four tracks each, except the outside groups which have three tracks each, thus providing space for the additional tracks previously referred to; each group is served by one double-length retarder. In addition, two single-length retarders are located in the leads in each route and there is a double-length retarder on the hump incline. The whole layout includes 24 single-unit retarders and 29 direct-acting power-operated switches.

The operation of the switches and the retarders is handled by three operators. One control machine located in Tower 1, controls the functions in the territory north of the line ABC (on the map). Two machines are located in Tower 2, one controlling the functions in the section south of line BC and east of line BD, while the second machine handles the section south of line AB and west of line BD.

Layout of Grades

The grades are laid out to provide sufficient acceleration to secure fast operation for loaded or empty cars, making allowances for head winds. A 4 per cent grade is used on the first section of the hump incline to give the cars a quick start when they pass the crest, followed by a 2 per cent grade through the first 77-ft. retarder. From this point the grades are gradually reduced to a non-accelerating grade of 0.3 per cent, starting at the clearance point of the yard tracks and extending throughout the yard.

There are five switches in any route that a car may traverse. The distance between any two of the first four switches is approximately 200 ft., while the distance between the last two is about 100 ft. Taking into consideration the placing of the retarders, the switches are so spaced as to reduce to a minimum the time required for the separation of cars taking different routes. To permit smooth operation at fairly fast speeds, all of the frogs and turnouts in the yard layout are No. 8, both sides of the turnout being curved so that maximum curvature in a turnout is limited to 7 deg. 30 min. Track circuits are employed to prevent the operation of a switch under a car.

Car Retarder Equipment

The car retarders are of the latest design, known as the Union Model-28, provided with heavy steel plates over the springs to prevent damage in case of a derail-

Interior of Tower 2, Control Machine at Right and Teletype at Left

ment. The wear-resisting steel shoes are so designed as to minimize the tendency of a light-weight car to lift out of the retarder, but in case a car leaves the rail in the retarder, equalization of pressure, obtained by the lever arrangement, causes the wheels to return to the rail at the end of the retarder. All bearings on the retarder are equipped with Alemite fittings. The lubricant is forced into these bearings under air pressure provided by special connections on the air line system. With this equipment one man can lubricate an entire retarder in a short time.

Air Supply

The air supply for the operation of the retarders and switches is provided by the air compressors in the adjacent engine terminal, the same compressors being used to supply air for vraious purposes in the shops as well as to pump up the air in train lines of trains that are made up, so that they can be pulled out as soon as the locomotive is coupled on.

Air reservoirs and condensers are provided independently for the retarder system, and in case the compressors are out of service temporarily on account of a power failure or for repair, the switches and retarders can be supplied with air by using the compressors on a locomotive, connections being provided on one of the repair tracks where a locomotive can be spotted so as not to interfere in any way with the operation of the yard.

The electrical power for the operation of the control circuits for the retarders, switches and signals is provided by a set of 12 cells of 120 a.h. Exide storage batteries on a-c. floating charge by a Union rectifier. A storage cell of the same type is provided for each group of track circuits.

Signaling Facilities

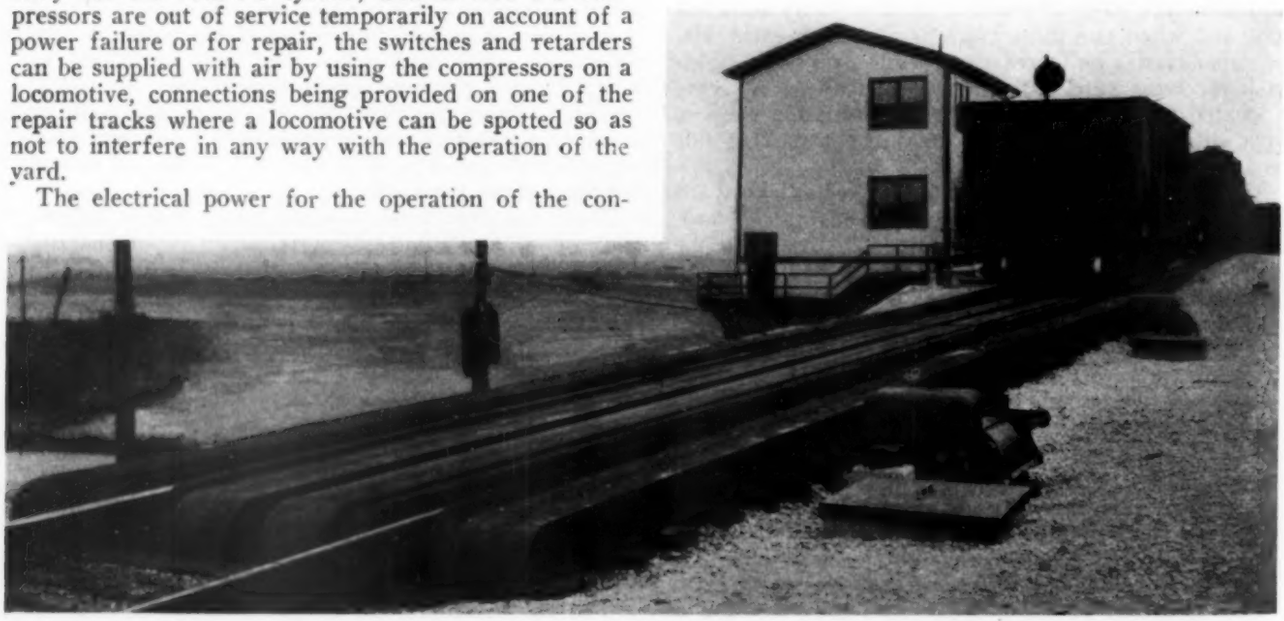
Color-light signals are provided to direct train movements in the yard. A small lever stand, equipped with repeater lights, is located in a shelter house at the crest of the hump. By moving the lever to different positions to the right, the hump signal, as well as the repeaters along the receiving yard, can be changed to indicate "hump slow"—"hump fast" or "stop," while by moving this lever to the left, the trimmer signal in the classification yard can be changed to indicate "trim" or "stop"; "stop" indicating that the trimmer engine shall stay in the clear.

A small two-light color-light signal is provided at each switch to indicate "lunar white" when the switch is normal and "yellow" when reverse. These lights, being side by side, are used primarily for the information of the enginemen of the trimmer engine, but can be used also by the retarder operator to check the position of the switch, although this information is also indicated by lights on the operating panel.

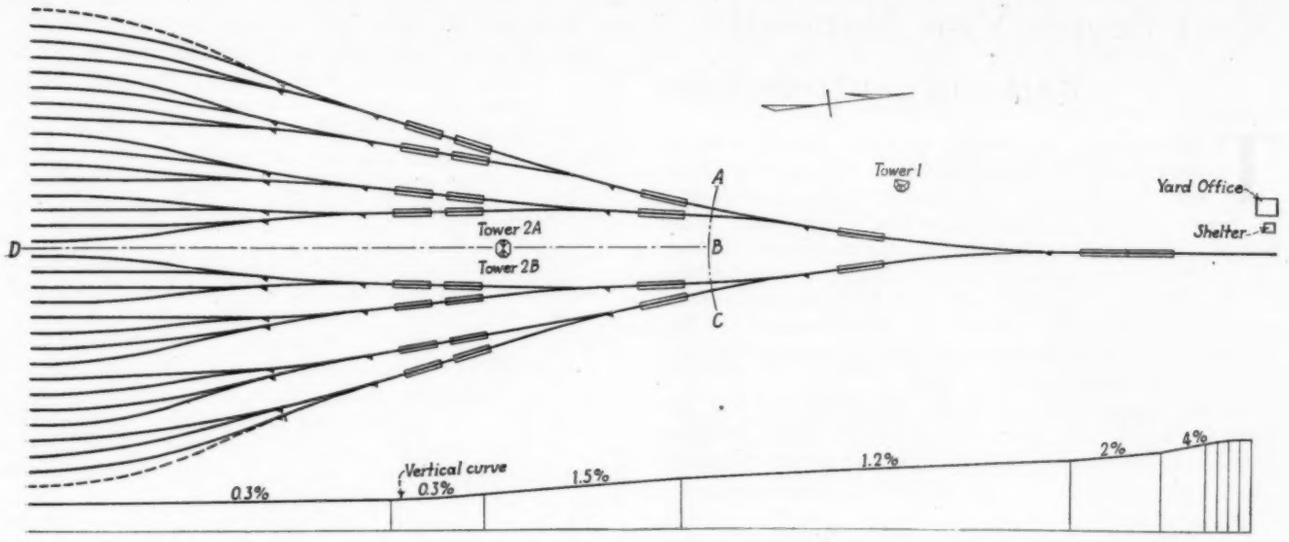
Communication System

In addition to the signals, a radio system is provided with a transmitter in the shelter house at the top of the hump, and loud speakers in the cabs of the two locomotives used for humping. With this equipment, the yard-master can talk directly to the engineman, telling him just what is wanted. At the present time this radio apparatus is cut out of service at the request of the Federal Radio Commission, but it is hoped that a proper wave length will soon be assigned so that the equipment can again be used.

A loud speaker telephone system is used for either-direction conversation between the two towers and the shelter house. In addition a Teletype is used to transmit the switching list to each of the two towers, the sending machine being located in the yard office near the hump, at which point an extra copy is made for



A Car Leaving the Hump and Starting Through the First Retarder



Plan Showing Yard Layout and Grades

the man who "cuts" the cars. This list gives the initial and number of the car, and indicates whether it is empty or loaded and if loaded whether the load is heavy or light.

The yard was completed and the retarder system placed in service on July 24, and the operation of the yard has been very satisfactory in speeding up operation as compared with the previous layout. The average cost of wages, fuel and other operating charges for handling each car has been reduced to 17.2 cents. The manifest freight traffic is being delivered to industries and team tracks in Cincinnati, an average of 1 hr. 30 min. quicker than before, while an average of 54 min. is saved on each car classified, and this saving can be materially increased when additional running-track facilities are provided so that trains can be pulled out as soon as ready. As it is now, the main tracks between Sharonville and Cincinnati are so congested that no freight trains can be moved through this area during the morning and evening rush hours when the passenger train movements are heavy.

Economies Effected by Car Retarder—Southbound Hump at Sharon Yard

Annual Cost of Operation without Car Retarder:		
Would require 3 hump engine tricks per day and use of an engine for trimming part time.		
Hump engine and crew	$72,971	
Trimmer engine and crew	43,756	
Car riders—8 men per trick	57,990	
Switch tenders—2 men per trick	11,103	
Motor car operators—1 man per trick	5,550	
Expense of operating motor car	950	
Total		$192,320
Annual Cost of Operation with Car Retarder:		
Requires 2 hump engine tricks per day with hump engine doing the trimming.		
Hump engine and crew	$58,341	
Retarder operators—3 men per trick	15,637	
Skatemen—1 man per trick	3,701	
Estimated maintenance of retarders:		
Labor	$ 5,875	
Material	10,380	
	16,255	
Estimated additional power plant fuel	2,500	
Taxes and depreciation	13,040	
Total		$109,474
Annual Saving		$ 82,846
Other Savings:		
Reduction in per diem on cars. Actual reduction in delays to cars amounts to average of 54 min. per car		$ 13,933
Note: With completion of terminal improvements, this saving will be greatly increased.		
Estimated reduction in car damage		3,000
Estimated reduction in personal injury claims account elimination of car riders		3,000
Total Annual Saving		$102,779

Savings Effected

Approximately $38 is saved each day in per diem charges, while about $2,624 is saved per month in crew wages in the operation of the yard. A detailed calculation as to the savings produced by the retarder system as compared with car riders shows a savings of about $102,779 a year, equivalent to a return of 19.4 per cent on the investment.

This study, the details of which are shown herewith, is based on a traffic of about 1,100 cars per day and when this is increased the savings will increase proportionately. It is anticipated that considerable classification, now being handled in other yards, will be done in Sharonville which will effect an additional saving in car riders wages sufficient to increase the return on the investment to about 40 per cent.

Uncoupling the Cars Into Cuts at the Top of the Hump

Most People Visit National Parks in Automobiles

THE number of visitors to 19 of the 21 national parks in 1929 was larger than in any year previous, but the mode of transportation is changing in favor of the private automobile. The total number of visitors, according to the report of the director of national park service, was 2,680,597 or an increase of 178,409 over last year, while in 1914 the visitors totalled only 235,193. During the 1929 season 689,945 private automobiles entered the park, in contrast to 595,236 in 1928 and 197,105 in 1922.

As the report does not show the number of rail visitors for all of the parks for 1929 and 1928, it is impossible to ascertain the trend in the mode of transportation for all parks. However, complete figures are available for four parks,—Crater Lake, Glacier, Yellowstone and Zion. If these are representative of the total, rail travel has decreased while automobile travel has increased, for, in 1929, a total of 417,640 persons visited these four parks by automobile in contrast to 348,450 in 1928, while 59,954 people came by rail in 1929 as compared with 61,464 in 1928.

Total Visitors to National Parks, 1925 to 1929

Name of Park	1925	1926	1927	1928	1929
Acadia	73,673	101,256	123,699	134,897	149,554
Bryce Canyon	.....	.....	.....	.....	21,997
Crater Lake	65,018	86,019	82,354	113,323	128,435
General Grant	40,517	50,597	47,996	51,988	44,783
Glacier	40,063	37,325	41,745	53,454	70,742
Grand Canyon	134,053	140,252	162,356	167,226	184,093
Grand Teton	.....	.....	.....	.....	51,500
Hawaii	64,155	35,000	37,551	78,414	109,857
Hot Springs	265,500	260,000	181,523	199,099	184,517
Lassen Volcanic	12,956	18,739	20,089	26,057	26,106
Mesa Verde	9,043	11,356	11,915	16,760	14,517
Mount McKinley	205	533	651	802	1,038
Mount Ranier	173,004	161,796	200,051	219,531	217,783
Platt	143,380	124,284	294,954	280,638	204,598
Rocky Mountain	233,912	225,027	229,862	235,057	274,408
Sequoia	46,677	89,404	100,684	98,035	111,385
Sullys Hill	9,183	19,921	22,632	24,979	21,004
Wind Cave	69,267	85,466	81,023	100,309	108,943
Yellowstone	154,282	187,807	200,825	230,984	260,697
Yosemite	209,166	274,209	490,430	460,619	461,257
Zion	16,817	21,964	24,303	30,016	33,383
Total	1,760,512	1,930,865	2,354,643	2,522,188	2,680,597

Private Automobiles Entering Parks During Seasons 1925 to 1929

Name of Park	1925	1926	1927	1928	1929
Acadia	9,381	15,361	29,181	31,998	35,972
Bryce Canyon	.....	.....	.....	.....	5,223
Crater Lake	19,451	26,442	25,667	34,869	39,043
General Grant	11,108	12,869	13,172	14,681	12,995
Glacier	7,585	6,727	7,980	9,860	14,320
Grand Canyon	19,910	22,849	28,479	32,316	37,848
Grand Teton	.....	.....	.....	.....	16,200
Hawaii	12,650	6,500	8,345	14,505	18,347
Hot Springs	.....	.....	1,559	1,455	28,290
Lassen Volcanic	2,646	5,423	5,899	8,137	8,370
Mesa Verde	2,197	3,054	3,315	4,803	4,224
Mount Rainier	39,860	38,626	48,275	50,005	51,998
Platt	60,000	45,796	75,000	70,000	65,000
Rocky Mountain	58,057	50,407	54,109	57,381	67,682
Sequoia	14,273	26,503	30,165	29,290	33,250
Sullys Hill	2,271	4,484	4,700	5,229	4,936
Wind Cave	22,598	28,332	26,879	33,300	36,317
Yellowstone	33,068	44,326	49,055	58,186	68,415
Yosemite	49,229	74,885	137,296	131,689	132,903
Zion	3,928	4,796	6,203	7,532	8,612
Total	368,212	417,386	557,079	595,236	689,945

The greatest increase in automobile visitors occurred at Yellowstone, the number this year being 214,585 compared with 183,565 last year. Here, also, the number of rail visitors decreased from 41,697 in 1928 to 38,979 in 1929.

Although the total figures of the four parks show a decrease in rail travel, Glacier and Zion show increases. At Glacier the number of rail visitors increased from 13,686 in 1928 to 14,750 in 1929 while at Zion the increase was from 4,940 in 1928 to 5,151.

Several other interesting facts are included in the report. Rocky Mountain Park showed the greatest increase in the total number of visitors, the increase being 39,351, or from 235,057 in 1928 to 274,408 in 1929. Hawaii was second with an increase of 31,443 or from 78,414 in 1928 to 109,857 in 1929, and Yellowstone third with an increase of 29,713 or from 230,984 in 1928 to 260,697 in 1929.

The proportion of the total visitors that came in automobiles is also striking. At Crater Lake 98 per cent of the total visitors entered by this means, at Mount Rainier 93 per cent, at Yosemite 90 per cent, at Yellowstone 83 per cent and at Rocky Mountain 73 per cent. In connection with this it is interesting to note the number of persons per automobile. At Mount Rainier the passengers per car averaged 3.9, at Rocky Mountain 3.5, at Glacier 3.4, at Yellowstone and Yosemite 3.1 and at Grand Canyon 3.

Another movement that might be mentioned in the changing mode of transportation is the development of flying service. This year this form of transportation was commenced between the eastern seaboard and Acadia National Park, Me., where quiet waters facilitate hydroplane landing while at Grand Canyon, the Scenic Airways Company operates sight-seeing trips by airplane over the canyon.

Rivers and Harbors Congress

WASHINGTON, D. C.

THE delegates in attendance at the twenty-fifth annual convention of the National Rivers and Harbors Congress on December 10 and 11, 1929, adopted a series of declarations pledging support of President Hoover's plans for the development of our waterway system to the end that it "may take its rightful place in the field of transportation and distribution." In support whereof, the convention declared that:

"All projects authorized should be completed within five years wherever possible and Congress should make funds available as required to carry out a continuing, uninterrupted program increasing the amounts from year to year with that object in view. By this means only can the economic returns on the investment be realized. That there may be no more lost time we call upon this Congress to pass a Rivers and Harbors act at the earliest practicable day, and that there be a return to the policy of an adequate annual rivers and harbors bill from which hereafter there may be, under usual conditions, no departure.

Completion of the Ohio river canalization project was cited by Representative Riley J. Wilson, of Louisiana, president of the National Rivers and Harbors Congress, in his annual address as an instance of the realization of the hopes and aspirations of the pioneers in waterway development who founded the congress. "It is also the beginning of a period of much shorter duration in which we shall see the completion of an adequate waterway system for the United States," he said. "When any project for navigation and commerce has been examined by the properly constituted authorities of the nation and approved as worthy and justified, then as a part of a national policy, this Congress favors its completion and utilization at the earliest possible."

P. J. Hurley, the new Secretary of War, said as follows:

"The improvement of waterways is a sound economic

policy. The plan under which projects are adopted safeguards federal funds, expenditures being authorized only when careful study indicates that a definite commercial or navigation need exists and that adequate benefits will result.

"There is every indication that inland waterways are steadily assuming greater and greater importance in the country's transportation structure. This is shown not only by the traffic figures but also by the continuance on a larger scale than ever of the aid rendered to the cause of river improvement by the federal government, as well as by the plans announced for the extension of private and common carrier service, by the many substantial contracts awarded for new equipment, and by the building of municipal terminals. These new plans, new enterprises, new enthusiasms indicate that even the present large volume of river traffic is destined to be exceeded in the not distant future.

"But the improvement of waterways should not be regarded from the economic viewpoint exclusively. Their contribution is primarily one that can be measured in dollars and cents; but the fact that it is so measurable should not blind us to its implication in other lines of national progress. They are an important factor in the plan for national security. A comprehensive waterways system knits our country together ever more firmly. The continuance of prosperity is assured and that prosperity will be equitably distributed. Equality of opportunity will be brought nearer to all the citizens of every section of the nation. In the last analysis, the Georgia schoolboy will get a better education when the Kansas farmer has a good crop because the obstacles to business between the two regions have been reduced by more efficient transportation."

The construction of four great waterway projects brings up the question of control of transportation charges on navigable waters of the United States, Major General William L. Sibert, chairman of the Alabama State Docks Commission, told the convention. He listed the four great projects as the Panama canal, the ship channel connecting the Great Lakes and the Ohio and Mississippi river projects.

"The country's experience with its railroads should not be repeated with its waterways," said General Sibert. "There is more reason for the control of charges on inland and coast wise waters than on railroads."

The Panama Canal Act is sufficient to prevent land carriers from operating boat lines in competition with independent water lines, General Sibert said, but there must be protection against destructive competition between water carriers themselves, and some governmental body should be authorized and given power to fix rates on navigable streams, in coastwise trade, and at ocean terminals. "Port to port interstate commerce in our coastwise trade is only partially controlled, and port to port interstate commerce on our rivers is absolutely uncontrolled," he said. Further legislation seemed necessary to the speaker and the United States Shipping Board was suggested as the proper body to control such transportation charges.

Senator Ransdell, of Louisiana, told the convention that "We must hold up the hands of the President as he is doing everything possible to benefit the people seeking to provide cheap transportation." Senator Ransdell, who was for many years President of the Rivers and Harbors Congress, cautioned members of the organization that they must "watch out for the railroads" in connection with possible activity against waterway improvement. He pointed out that only ten years were required for building the Panama Canal, whereas the canalization of the Ohio River, which began in 1876, was not completed until 1929.

Looking Backward

Fifty Years Ago

The laying of the last rail, two days ago, on the Cincinnati Southern [now a part of the Southern] marked the virtual completion of a remarkable and important enterprise—the only instance of a major railroad being built by a single city in order to develop its commercial interests. The line runs from Cincinnati nearly due south through Kentucky and Tennessee, to Chattanooga on the borders of Georgia and Alabama, 336 miles. The original estimate of cost was $10,000,000, but this proved inadequate and the city voted additional aid until it has now issued bonds to the amount of $18,000,000.—*Railway Age,* December 11, 1879.

When, in 1869, the Union Pacific and the Central Pacific were completed it was believed that another transcontinental line would never be needed or projected. But since that time there has been such a change in thought on the subject that six other lines are in progress of construction to the Pacific coast. These projects are the Canadian Pacific, the Northern Pacific, the Thirty-fifth parallel route [now the Atchison Topeka & Santa Fe], the Southern Pacific or Thirty-second parallel line, the Santa Fe route to Guaymas on the Gulf of California and the Utah & Northern [now part of the Union Pacific System].—*Railway Age,* December 11, 1879.

Twenty-Five Years Ago

Eighty-five and six-tenths per cent of the freight cars of the country now have air brakes, according to the latest report of the American Railway Association.—*Railroad Gazette,* December 16, 1904.

A. W. Newton, who has been superintendent of construction of the Old Monroe-Mexico cut-off of the Chicago, Burlington & Quincy, has been appointed district engineer of the Missouri district of that road.—*Railroad Gazette,* December 16, 1904.

A bill is now under consideration in Washington, D. C., which has for its object the creation of an interstate commerce circuit court, conjointly with an interstate commerce court of appeals, the members of which shall be appointed for life. This court is to have original and exclusive jurisdiction of all intertsate commerce cases, subject to appeal to the Supreme Court. It is reported that the idea has the indorsement of the President.—*Railway Age,* December 16, 1904.

Ten Years Ago

Carl R. Gray, chairman of the board and president of the Western Maryland and former director of the division of operation of the Railroad Administration, has been elected president of the Union Pacific.—*Railway Age,* December 12, 1919.

The strike of bituminous coal miners begun on November 1 was definitely called off on December 10 when the officers of the United Mine Workers at a meeting in Indianapolis, Ind., agreed to accept a plan of settlement proposed on December 6 by President Wilson.—*Railway Age,* December 15, 1919.

The railroad bill came near to being passed by the Senate by default on December 8 but has since encountered what almost amounts to a filibuster by Senator La Follette. After having been before the Senate for a week as unfinished business, while the attendance scarcely exceeded a dozen at any time except for roll calls, the Cummins bill was reported from the Committee of the Whole, read the third time and a vote of its final passage had been called for, when the proceedings were interrupted by a call for a quorum by Senator La Follette. This left the bill in the Senate and open to amendments.—*Railway Age,* December 15, 1919.

Communications and Books

Explaining Operating Rules

ST. LOUIS, MO.

TO THE EDITOR:

In my experience as an operating rules instructor, I have found that much of the misunderstanding of rules among transportation employees is caused by reading what purport to be interpretations of the rules in various magazines, with frequent differences of opinion among the writers, all of which have caused differences in construction or meaning on various lines.

I do not believe in asking men questions and then explaining the rules. Rather, the rules should be explained first, then the questions asked, and, if necessary, further explanations given.

Employees changing from one line to another and, frequently, from one division to another, find different interpretations of the same rules. All railroads operating under the standard rules should operate exactly alike, except, of course, for the necessary changes because of varying physical conditions.

I have lined up train dispatching forces to word orders exactly alike on all divisions, and, with that as a lever, have trained the other transportation employees subject to examination, so that there would be no difference of understanding. Argument is useless and confusing, for, regardless of personal opinion, each man must operate according to the management's ideas.

F. O. TOBIAS.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Agricultural Relief—A Selected and Annotated Bibliography, compiled by Esther M. Colvin. The sections listing Congressional committee hearings and Congressional reports and documents are valuable aids to quick reference. Agricultural Economics Bibliography No. 27. 52 p. Pub. by Library, Bureau of Agricultural Economics, Washington, D. C. Apply.

Interpretive Accounting, by F. E. Folts and A. B. Stillman. While this volume does not take up railway accounting, the discussions of the value of records and accounts, of the essentials of accounting and statistics (simplicity and completeness), and the use of accounts and statistics by the management of business concerns will probably be of interest. 432 p. Pub. by Longmans, Green & Co., New York City. $4.

The Panama Canal and the Intercoastal Trade, by Arnold Kahle Henry. A thesis at the University of Pennsylvania. Part 11 discusses the effects of the Panama canal upon transcontinental rail traffic, rates and routes, p. 41-79. 108 p. Publisher not given, but probably available from Author, Philadelphia, Penna.

Second Special Indian and Eastern Number, Railway Gazette, December 2, 1929. "All the principal company-managed railways in India, the Royal State Railways of Siam, the Japanese Government Railways, and the systems of China receive attention in this Second Special Number . . . " The lines included are the Bombay, Baroda & Central India, the Bengal-Nagpur, the Darjeeling-Himalayan, the Bengal & North Western, the Madras & Southern Mahratta, the South Indian, H. E. H. The Nizam's Guaranteed State Railways, and the Assam-Bengal, with the Royal State Railways of Siam, the Japanese Government and Japanese Colonial, the South Manchuria, and the Chinese railways. The editorial on railway travel in the east recalls Kipling's "Kim," while the pictures and the maps visualize a modern Far East that is as striking as it is picturesque. 168 p. Pub. by Railway Gazette, London, England. 2 shillings, sixpence.

Women in Gainful Occupations 1870 to 1920, by Joseph A. Hill. Census Monographs No. 9. "The term 'women' as here used includes all persons of the female sex 16 years of age and over . . . The interest in women's occupations lies not so much in the number occupied or in the amount of work that they are doing as in the change that is taking place in the character of their occupations and the extent to which their work takes them away from the home which was once the sole field of occupational activity for most women." p. 1, 4. Table 15 "Women employed in each specified occupation" shows number of women employed in railroad and other transportation (p. 176-178). 416 p. Pub. by U. S. Govt. Print. Off., Washington, D. C. $1.50.

Periodical Articles

A Disaster in Management, Part II, by Frederick A. Van Fleet. Conclusion of article on financial adventures of the Brotherhood of Locomotive Engineers. Nation's Business, December 1929, p. 63-70.

Engineers in American Life, by L. W. Wallace and J. E. Hannum. "The primary purpose of this paper is to determine to what degree engineers and architects are prominent in American life as shown by the training, experience, and activities of those listed in 'Who's Who.'" p. 901. Mechanical Engineering, December 1929, p. 899-904.

Nondestructive Testing, by Elmer A. Sperry. A history of the experiments leading up to the development of the transverse fissure detector car. Illustrated. Transactions of the American Society for Steel Treating, November 1929, p. 771-790.

Report No. 3 (America) on the Question of the Improvements in the Steam Locomotive. Discusses increased pressures and higher superheats, improvements in the design of superheaters and parts connected with superheating, feed water heating and air pre-heating, improvement of valve gears, and increased efficiency of American railroads through improvements in motive-power. A paper to be presented at the 11th International Railway Congress at Madrid, Spain next year. Bulletin of the International Railway Congress Association, October 1929, p. 2113-2148.

Scientific Research in Transport, by Sir Josiah A. Stamp. Inaugural address as President of the Institute of Transport. "I consider our earliest attention ought to be given to see that the *pressure* of scientific research is applied equally at all points of the problems of transport." p. 8. "On the whole, in the field of pure theory and scientific application, drive is not lacking. . . But it is a common denominator of economic application that is lacking, and here the science of comparative costing is in its infancy. . . " p. 9. Journal of the Institute of Transport, November 1929, p. 6-16.

The Spanish Railway Regime, by Charles A. Livengood. Outline of new regime to follow the close of the special regime in 1930, together with brief review of the financial, construction and operating accomplishments to the special regime. Commerce Reports, December 9, 1929, p. 637-638.

Spherical Containers for Transporting Gas Under High Pressure. "The idea of using spherical containers for the transportation of gas under high pressure was conceived by the A. O. Smith Corporation, and a tank car, based on this idea, was developed for the U. S. Navy. This new type of car, Fig. 1, carries six spherical containers capable of transporting 210,000 cu. ft. of free helium at a pressure of 2000 lb. per sq. in. . . . Inasmuch as this construction has not been provided for in the regulations of the A.R.A. and the I.C.C., it was necessary to obtain the approval of these bodies before this type of car could be used . . ." Illustrations show car and test spheres. Mechanical Engineering, December, 1929, p. 941-943.

Taxation of Railways in Canada: Analysis of the Burden, by Herbert E. Dougall. Shows lack of uniformity, effect of exemptions and influence of government ownership. Also compares taxation of Canadian railways with those in the United States according to various indices. Journal of Land and Public Utilities Economics, November, 1929, p. 338-411.

Odds and Ends of Railroading

A switchman for the Illinois Central at Chicago has coined a particularly apt phrase to describe modern shunting practices. He calls his occupation "switchmanship."

A Long-Time Crew

The Atlantic Coast Line claims a record of some sort for the crew running on the Waycross district. The engineman, R. L. Dekle, boasts 50 years' service, Conductor C. L. Morgan, has 45 years of service behind him, and William P. Green, colored fireman, has been manning a scoop for the A. C. L. for 30 years, a total of 125 years' service for the one crew, much of it together.

The Smallest Big Railway Terminal

Sumas, Wash., a town of less than 200 inhabitants, on the Canadian border, south of Vancouver, B. C., lays claim to being the smallest town on four transcontinental railways. Not only that, but Sumas is the terminus for three of these railways, which include the Chicago, Milwaukee, St. Paul & Pacific, the Northern Pacific, the Great Northern, and the Canadian Pacific. In addition, the town is a terminus for the British Columbia Electric.

G. N. Officials Puzzled By Bequest of $1,000

Officials of the Great Northern were mystified by receipt of an announcement that a former Minneapolis civil war veteran who died in California had willed the road a gift of $1,000. The veteran was Chauncey S. Branch, who some years ago lived at the Minnesota Soldiers' Home at Minneapolis. The terms of the will give no reason for the bequest to the Great Northern, and a son of Mr. Branch in Los Angeles said that he had no knowledge as to why his father wished to give the railway the money. Mr. Branch's total estate was only $6,000.

Strange Passengers

The largest consignment of foxes which ever has been shipped out of America was shipped on one of the Northern Pacific passenger trains recently. The shipment, which was valued at $102,000, consisted of an express carload of blue and silver foxes. They were transported in 351 crates. The shipment, which was received by the railway company at Seattle, was billed to New York, with final destination Hamburg, Germany. A few of the foxes, however, will be shipped to Sweden. The foxes all were excellent specimens. They will be used in Germany and Sweden for breeding purposes.

Youth and Age

At the recent meeting of the Milwaukee Veterans' Association, held in Seattle, Wash., one of the most active delegates was J. M. Horan, aged 91, who had just rounded out 75 years of active service with the Chicago, Milwaukee, St. Paul & Pacific, and has no thought as yet of retiring. Mr. Horan is one of the oldest active railroaders in this country. He is the oldest on the Milwaukee, and his great-granddaughter, who is a stenographer in the service, is the youngest employee. This is probably the only case where a great-grandfather and his great-grandchild are employed by the same railway, and in active service.

A Bit of History

E. R. Anthony, superintendent of the Coast division of the Southern Pacific, who has been in the service of that company for 54 years, lives very much in the present and prefers to speak of what the division is accomplishing at present rather than to reminisce upon what has happened in the past. However, he was prevailed upon the other day to explain how it was that the Southern Pacific was able to make such a rapid recovery following the disastrous earthquake and even more disastrous fire in San Francisco some twenty odd years ago. It appears that, by a strange and fortunate coincidence, it was decided to double track the Coast division and the work was to have been begun on the very day the disaster occurred. A force of 300 men with tools and materials had been assembled at San Jose and was ready to start work on the morning of the disaster. Instead of double-tracking, however, they were put to work rehabilitating the line in the vicinity of San Francisco, so that the Southern Pacific was able to be a major agency in relieving the stricken city and aiding in its rebuilding.

Scott's Hobby

"Every well-rounded man should have a hobby," says F. E. Scott, assistant freight traffic manager of the Southern Pacific. "Further, to do him the greatest amount of good, his hobby should be as different from his work as possible," he contends. "It will give him a different slant on life from his job and will greatly improve the character of his work. A man who keeps his mind on one thing all the time goes stale, and there is nothing like a hobby to freshen him up." Mr. Scott's avocation is music. He plays all wind instruments

F. E. Scott Composing

and also the piano. His musical activities have been numerous. He has been bandmaster of the famous California Greys band of San Francisco, has led the Aahmees Shrine band of Oakland as well as being a member of the Oakland Commandary Band. He has also been a member of San Francisco's Bohemian Club band. The Southern Pacific band of Ogden, Utah, which later developed into a municipal organization was started by Mr. Scott. Frank Siegrist, cornet soloist in Paul Whiteman's band, blew his first note under Scott's guidance and mastered the instrument under his instruction. In addition to his interpretative work, Mr. Scott is also a composer of no mean ability, and has a number of marches to his credit.

NEWS of the WEEK

The Lehigh Valley's "Black Diamond" at Mountain Top, Pa.

TRAFFIC ON THE MEXICAN RAILWAY was suspended on December 6, when all train and office employees walked out on a strike. President Portes Gil has accepted the invitation of the management and the employees to act as an arbiter in the controversy.

A TEMPORARY INJUNCTION restraining members of the brotherhoods who struck on the Toledo, Peoria & Western on November 13 from interfering with the operation of the road was issued by Judge Louis Fitzhenry of the federal court at Peoria, Ill., on December 5.

THE RAILWAY CLUB OF PITTSBURGH will hold its next meeting at the Fort Pitt Hotel on Thursday evening, December 19. W. R. Cox, freight traffic manager of the Pennsylvania, will speak on "The Romance of the Rails." The meeting will be preceded by a dinner at six o'clock.

SENATOR HOWELL of Nebraska, on December 11, introduced in the Senate a joint resolution providing that railroad valuations shall be determined by the Interstate Commerce Commission in accordance with the principles and methods used by it in the O'Fallon case.

THE MISSOURI PACIFIC has purchased the Plaza building, a 12-story office structure, which adjoins that company's headquarters building at St. Louis, Mo., at a cost of about $1,250,000. The building, which was completed this year, contains about 90,000 sq. ft. of floor space.

THE SUPREME COURT of the United States on December 9 consented to review the case of the Texas & New Orleans against the Brotherhood of Railway Clerks in which the lower court issued an injunction restraining the company from dealing with a "company union."

JOHN W. BRICKER, formerly assistant attorney general of Ohio, has been appointed a member of the Ohio Public Utilities Commission, to fill a vacancy caused by the resignation of Roscoe C. McCulloch, who has been appointed United States Senator. F. W. Geiger, a member of the commission, has been appointed chairman, to succeed Mr. McCulloch.

THE PUBLIC SERVICE COMMISSION of New York state, in ordering the revision of highways in connection with the construction of bridges to eliminate railroad grade crossings, may lawfully order a road to be widened. This is the gist of a decision by the New York State Court of Appeals on December 3, in a case where the New York Central had objected to the Commissions' action in the case of a crossing on the Saugerties-Kingston highway.

Alaska Railroad

The government-owned Alaska Railroad had an operating deficit for the year ended June 30, 1929, of $950,711, according to the annual report of the Secretary of the Interior. There was a decrease as compared with the year before in revenues derived from the transportation of freight and passengers, and the operating ratio increased from 159.32 in 1928 to 179.28 in 1929. Passenger revenue from rail operation was $210,994, a decrease of 4.7 per cent, and freight revenue, rail line, was $669,356, a decrease of 24 per cent.

Wage Statistics for September

Class I railways reported to the Interstate Commerce Commission a total of 1,747,816 employees as of the middle of September. The total compensation for September was $248,012,305. Compared with the returns for the corresponding month of last year, the summary for September shows an increase of 1.45 per cent in the number of employees. The total compensation shows an increase of 3.5 per cent.

Calendar Reform

The Chamber of Commerce of the United States announces that a final canvass of votes in the referendum which it took on calendar reform has changed the results, as announced on October 26. Upon the question whether or not there should be changes in the calendar the Chamber takes no position, but if changes are to be considered the Chamber believes they should be determined through international conference and if an international conference is called the United States should participate.

Arkansas Full Crew Law

The Arkansas full crew law costs the railroads operating in that state a needless expenditure of a million dollars a year. This statement was made by Edward S. White, general attorney of the Missouri Pacific in the Federal Court at St. Louis, on December 7, in the hearing on a suit which seeks to enjoin the enforcement of this law in Arkansas. The law requires the employment of three brakemen on freight trains of more than 25 cars, and the Missouri Pacific has on this account to make an annual expenditure of $600,000. The attorney for the Brotherhood of Railroad Trainmen, Donald Richberg, argued that the case was one which should be decided by the Interstate Commerce Commission and that the court had no jurisdiction in the matter. The judges presiding at the hearing were C. B. Faris of St. Louis; Kimbrough Stone of Kansas City, Mo.; and Frank A. Youmans of Fort Smith, Ark.

When Winter Comes

The Boston & Maine, in preparing itself for the usual New England winter, has put in order 58 snow-plows, 18 truck plows, five tractors and sweepers and four snow spreaders; 82 locomotives are equipped with snow melters and there are five modern snow loaders. Other safeguards against snow blockades include 93 snow melting stations, and 12 switch heaters. The road has a new snow slicer, plow and loader, the first of its kind in New England. This machine has two sets of wheels, one for rails and one with automobile tires, for use on the highway. The snow loaders are operated by gasoline motors.

The personnel of the Boston & Maine which is organized for instant response to any and all demands of the train dispatchers to clear the road of snow, numbers 3,000 men; and, as a second line of defense (or attack) 2,500 shop men and other employees can be called upon.

Snow-fighting equipment and snow-

fighting men are centralized at 207 points on the Boston & Maine system. At the large city stations, tractors with brushes are used to clear the platforms.

Presentation of Harriman Medals

The Harriman Memorial Medals, recognizing each year the measure of progress accomplished in the promotion of safety on railroads, and the awarding of which was noticed in the *Railway Age* of December 7, page 1350, were presented to representatives of the different roads at a luncheon in New York City on December 5.

Present on behalf of the Union Pacific System was C. R. Gray, president, and W. M. Jeffers, vice-president in charge of operation. When the medal was tendered, Mr. Gray gracefully turned the matter over to Mr. Jeffers, saying that he, "representing the fellows on the line," was the suitable officer to accept the award. Mr. Jeffers, in a brief response, told of the activities of the Union Pacific in the promotion of safety.

The silver medal for the Duluth, Missabe & Northern, was received by W. A. McGonagle, president; J. B. Parrish, assistant vice-president of the Chesapeake & Ohio, received the certificate of honorable mention accorded that road (in Group A). P. E. Odell, vice-president and general manager of the Gulf, Mobile & Northern, was awarded similar recognition in Group B, and Frank V. Whiting, representing the Evansville, Indianapolis & Terre Haute (New York Central System) received the certificate of honorable mention in Group C.

The host at the luncheon was F. D. Underwood, former president of the Erie, personal representative of Mrs. E. H. Harriman.

M. T. Cogley, president of the Texas-Mexican, which road was awarded the bronze medal in Group C, was unable to be present..

Dinner to Prize Winners

In connection with the eighth National Boys' and Girls' Congress at Chicago, last week, the winners in the various contests were tendered a dinner by western railroads on December 5. These contests covered field crops, livestock, gardening and domestic work, and were conducted by the railways. The reward included free transportation to the International Livestock Exposition and the Congress.

Hal S. Ray, director of personnel and public relations of the Chicago, Rock Island & Pacific, was the principal speaker at the dinner, which was attended by 1,000 visitors from 43 states. He credited the origin of the work of this 4-H organization, now numbering 750,000 farm boys and girls, to John D. Rockefeller, whose agricultural research in the south developed into the present 4-H activities. In discussing the work, Mr. Ray said:—

"I believe it is generally admitted that the real founder of the work now being carried on by the 4-H Club is S. A. Knapp, formerly connected with the Agricultural College of Iowa. He was employed by John D. Rockefeller to make a survey of the southern states to see what could be done to improve rural conditions in the South. He organized what were known then as 'Corn Clubs for Boys and Girls', called the farm demonstration system, which was closely coupled with the county agricultural agent system. The Rockefellers carried on this work for some years until finally the federal state and county governments worked out, during the administration of President Roosevelt, a plan for agricultural work in the various states. Former Secretary of Agriculture, E. T. Meredith, of Iowa, is accredited with being one of the greatest factors in the development of the 4-H Club work. He was instrumental in getting the business interests of the country back of it. While the club work had been in existence for a long time, the movement did not take on its present importance until an appeal was made to the business interests and, especially, to the railroads, with their present educational prize system, through which it is possible to bring the 4-H boys and girls together in Chicago coincident with the International Livestock Exposition. The national committee, which administers this work, with headquarters here in Chicago, has, of course, been a great factor in the work and it would be impossible to hold the National Congress without it."

The Pennsylvania Optimistic

The new passenger station project of the Pennsylvania in Philadelphia is remaking the center of that city; and, in connection with municipal improvements associated with it, constitutes one of the most notable plans of the kind on a truly great scale ever undertaken in either America or Europe. This statement was made by Gen. W. W. Atterbury, president of the Pennsylvania, in an address given at a dinner of the Manufacturers' Club, Philadelphia, on December 7.

In accordance with the wishes of his host, Gen. Atterbury devoted himself mainly to matters of particular interest to that city, but he touched in a general way on the whole of the immense program of improvement which now occupies the attention of the directors of the road. Various details of these multifarious enterprises are already familiar to the readers of the *Railway Age*, as set forth in our issues of December 7, page 1327, and October 12, page 853; and at numerous other times.

Expenditures in Philadelphia and vicinity will amount in 1930 to about $38,000,000, the improvement and elevation of freight tracks and facilities in South Philadelphia being an important part of this work.

The electrification project, which includes the line from New York to Washington and a part of the low grade freight line westward from Philadelphia, will call for an expenditure of a hundred million dollars, and will make Philadelphia the center of the largest system of electrically operated lines in this or any other country. West of Trenton, N. J., the electrical work is under way and that between New York and New Brunswick, N. J., has been placed under contract. Recent expenditures for new locomotives and freight cars have amounted to $17,000,000 and a considerable amount of other orders in this field, including passenger cars, will probably be given in 1930.

"In short," President Atterbury said, "the Pennsylvania, in every sense of the word is a thorough optimist. We have every intention of going ahead with our entire program of improvements as originally planned, without any slackening, retrenchment or postponement. Nothing that has happened in the security markets has altered this intention, and we see nothing in the general business situation to warrant our deviating from this course. We believe with President Hoover that the country and its fundamental business conditions are sound. We have just testified to our faith in this respect by planning to issue $90,000,000 additional stock within the next few months, for subscription by our stockholders and employees. We have pledged our full support and co-operation to President Hoover's program for the furtherance of stability and prosperity in American industries, and we believe that in so doing we have the complete support and approval of our stockholders and of the public at large."

Improvement Program of the Reading

Agnew T. Dice, president of the Reading, in a speech before the Manufacturers' Club at Philadelphia, on December 7, reviewing the general railroad situation and calling attention to the great increase in efficiency which has been accomplished by American railroads during the past eight years, gave some details concerning the present situation of the Reading, with a brief sketch of the plans for improvement now being carried out.

The Reading, though forty-eighth in the list of Class I carriers when measured by mileage, stands fifth on the basis of the number of revenue tons carried; and there are only two roads of substantial length which transport a greater number of ton-miles of revenue freight per mile of road. The density of population in the territory served by the Reading is 12 times greater than the average of the United States, and twice as great as that of the Middle Atlantic states. The manufacturing density of this territory is 18 or 20 times greater than that of the country as a whole and three times greater than that of New England. The Reading is known as an anthracite road, yet anthracite constitutes only 21 per cent of its total tonnage; and bituminous coal represents 33 per cent.

Reviewing recent prominent improvements, like the North Broad Street passenger station, the perishable produce terminal (operated in conjunction with the Baltimore & Ohio) the Port Richmond

(Continued on page 1402)

Revenues and Expenses of Railways

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1929

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Akron, Canton & Youngstown	Oct.	171	$307,557	$143	$318,161	$54,216	$27,162	$14,287	$84,003	$19,760	$196,556	61.8	$121,605	$98,542	$69,112	$100,748
	10 mos.	171	3,227,583	1,461	3,349,541	451,896	270,378	139,566	795,308	178,108	1,830,806	54.7	1,518,735	1,293,673	968,849	629,599
Atchison, Topeka & Santa Fe	Oct.	9,663	18,092,903	2,469,737	22,298,044	3,011,574	3,624,763	424,863	5,051,531	449,536	12,427,668	55.7	9,870,376	7,834,411	7,860,131	8,609,269
	10 mos.	9,663	139,816,507	29,568,609	187,316,840	27,972,674	33,926,384	4,143,366	50,366,952	4,428,434	120,489,984	64.3	66,826,856	50,593,943	50,564,603	38,151,354
Gulf, Colorado & Santa Fe	Oct.	1,944	2,936,074	185,188	3,284,143	497,412	443,002	58,264	748,002	68,661	1,798,802	54.8	1,485,341	1,278,884	1,177,247	1,267,867
	10 mos.	1,944	21,013,352	1,787,771	24,443,900	5,141,869	4,478,506	561,162	7,066,047	734,834	17,871,970	73.1	6,571,930	5,511,120	4,292,638	3,715,997
Panhandle & Santa Fe	Oct.	1,568	1,676,750	111,042	1,897,951	281,185	303,034	20,343	479,351	35,303	1,117,371	58.87	780,580	679,254	570,280	525,506
	10 mos.	1,537	13,102,615	1,051,902	15,210,275	3,014,813	2,466,396	197,079	3,997,324	356,175	9,851,175	64.77	5,359,100	4,983,912	3,712,609	3,602,039
Atlanta & West Point	Oct.	93	184,377	46,564	268,267	22,682	38,635	12,124	94,154	12,727	185,078	69.0	83,189	65,817	48,544	54,289
	10 mos.	93	1,626,459	482,556	2,440,492	335,279	419,906	123,818	920,445	136,808	1,982,819	81.2	457,672	319,425	180,239	285,737
Western of Alabama	Oct.	133	212,748	52,958	298,032	38,717	37,639	12,838	89,503	12,903	195,929	65.7	102,103	79,012	82,422	57,013
	10 mos.	133	1,763,681	516,057	2,546,399	453,295	486,715	127,379	830,817	135,310	2,073,993	81.4	472,406	320,316	355,681	643,482
Atlanta, Birmingham & Coast	Oct.	639	349,966	19,927	417,766	112,810	88,449	26,952	149,707	18,524	410,086	98.2	7,680	—9,514	—22,076	8,791
	10 mos.	639	3,318,448	223,502	4,017,821	915,246	836,359	282,389	1,539,272	185,944	3,869,175	96.3	148,646	—20,711	—143,599	—138,706
Atlantic Coast Line	Oct.	5,152	3,786,590	614,027	4,927,914	831,492	1,173,409	165,858	1,960,909	173,279	4,341,566	88.1	586,348	134,726	327,815	784,863
	10 mos.	5,151	45,248,366	10,524,963	61,470,417	8,618,878	11,595,687	1,628,921	20,706,430	1,750,742	44,837,587	72.9	16,632,830	11,313,007	11,414,490	7,452,979
Charleston & Western Carolina	Oct.	342	223,891	9,380	244,949	62,436	37,943	5,939	100,439	8,216	214,961	87.8	29,988	12,487	15,517	116,034
	10 mos.	342	2,472,681	103,986	2,684,769	571,254	382,318	70,518	957,466	72,277	2,053,367	76.5	631,402	390,300	378,508	419,874
Baltimore & Ohio	Oct.	5,639	19,436,553	1,866,713	22,899,047	2,736,118	4,627,828	483,709	7,362,688	699,632	16,115,124	70.4	6,783,923	5,710,784	5,256,490	6,233,193
	10 mos.	5,639	174,902,117	18,868,412	208,988,441	25,341,553	43,367,272	4,960,357	69,440,198	6,886,732	151,877,899	72.7	57,110,542	46,574,145	43,514,963	40,575,779
Baltimore & Ohio Chic. Term	Oct.	82	.....	.....	402,092	34,100	52,866	2,598	187,959	19,307	301,169	74.9	100,923	33,767	141,445	134,361
	10 mos.	82	.....	.....	3,766,652	429,869	449,914	24,227	1,813,409	179,584	2,938,075	78.0	828,577	188,161	1,226,961	1,173,045
Staten Island Rapid Transit	Oct.	23	91,702	124,908	229,918	16,862	17,611	2,456	108,225	16,042	161,196	70.1	68,722	50,722	40,227	42,364
	10 mos.	23	732,385	1,358,772	2,225,217	234,852	169,942	20,836	1,069,982	158,520	1,654,132	74.3	571,085	394,268	328,335	277,743
Bangor & Aroostook	Oct.	619	906,931	36,121	977,663	102,853	207,838	6,203	185,506	26,205	531,686	54.4	445,977	370,485	355,458	273,326
	10 mos.	619	5,817,111	469,685	6,705,541	1,095,696	1,276,263	58,351	1,586,311	266,963	4,309,566	64.3	2,395,975	1,863,938	1,972,334	1,650,071
Belt Ry. Co. of Chicago	Oct.	48	.....	.....	787,789	54,892	82,067	3,682	338,740	16,289	495,670	62.9	292,119	229,543	152,848	140,405
	10 mos.	48	.....	.....	7,039,727	664,120	751,315	37,986	3,127,636	150,299	4,731,356	67.2	2,308,371	1,727,587	1,508,339	1,441,198
Bessemer & Lake Erie	Oct.	227	1,858,721	5,185	1,887,081	99,689	366,363	13,719	364,865	34,233	881,354	46.7	1,005,727	864,722	900,173	956,947
	10 mos.	227	15,567,625	74,913	15,879,356	1,129,669	3,296,341	141,900	3,303,829	354,604	8,205,809	51.7	7,673,547	6,702,013	6,898,773	4,986,966
Bingham & Garfield	Oct.	33	44,663	.....	45,830	10,005	12,580	1,406	10,163	4,554	38,832	84.7	6,998	356	16,657	25,106
	10 mos.	33	445,771	.....	469,433	82,688	54,136	15,553	110,280	44,808	308,902	65.8	160,531	42,582	209,211	172,107
Boston & Maine	Oct.	2,077	5,369,919	1,288,982	7,651,447	1,155,102	1,835,388	90,786	2,441,192	215,196	5,763,333	75.3	1,888,114	1,536,746	1,203,842	1,108,093
	10 mos.	2,077	43,728,818	13,738,272	66,100,250	11,250,228	12,090,484	922,713	22,521,212	2,163,671	49,183,249	74.0	16,917,001	13,658,828	11,312,177	10,915,181
Brooklyn Eastern Dist. Term	Oct.	11	124,929	.....	128,191	6,122	21,837	1,040	43,338	6,366	78,703	61.4	49,488	42,427	42,427	44,220
	10 mos.	11	1,184,495	.....	1,212,261	95,674	155,047	6,084	418,251	65,977	741,033	61.1	471,228	396,427	396,427	398,598
Buffalo & Susquehanna	Oct.	253	151,870	603	166,710	31,133	58,445	2,554	46,826	7,571	146,528	87.9	20,181	18,081	43,245	47,937
	10 mos.	253	1,339,865	9,221	1,466,696	293,698	514,705	19,270	443,553	77,407	1,348,633	92.0	118,063	116,156	280,754	231,232
Buffalo, Rochester & Pittsburgh	Oct.	601	1,522,427	56,529	1,633,878	290,726	394,200	34,429	565,476	43,662	1,325,999	81.2	307,879	242,869	270,149	232,522
	10 mos.	601	13,705,288	704,067	14,981,981	2,000,272	4,155,919	335,657	5,302,845	441,221	12,245,963	81.7	2,736,018	2,260,210	2,513,083	2,377,743
Canadian Pacific Lines in Maine	Oct.	233	154,711	21,452	191,385	44,929	43,975	7,509	77,414	4,148	177,975	93.0	13,410	—1,490	—17,366	—138,210
	10 mos.	233	1,955,878	313,834	2,399,293	573,332	510,788	71,698	1,064,425	41,205	2,261,448	94.2	137,845	—7,555	—223,112	—303,196
Canadian Pacific Lines in Vermont	Oct.	85	152,617	27,279	199,703	26,284	24,279	1,951	81,727	2,280	136,175	68.2	63,528	59,341	23,778	—16,632
	10 mos.	85	1,206,142	371,304	1,810,036	360,518	297,911	18,737	931,893	23,776	1,631,712	90.2	178,324	137,957	—204,564	—1,053,587
Central of Georgia	Oct.	1,944	1,846,497	233,469	2,305,631	305,151	400,188	63,489	796,795	84,937	1,658,500	71.9	647,131	492,037	500,770	540,156
	10 mos.	1,944	16,191,075	2,909,949	21,194,133	2,963,810	3,695,527	701,695	7,789,801	871,464	16,145,281	76.2	5,048,852	3,707,295	3,797,105	3,599,916
Central New Jersey	Oct.	690	4,540,979	719,325	5,631,833	574,606	1,065,690	62,398	1,905,984	138,760	3,773,853	67.0	1,857,980	1,320,153	1,270,113	1,194,147
	10 mos.	690	37,723,749	7,801,987	48,845,992	4,821,555	10,077,090	621,761	18,196,401	1,310,532	35,316,701	72.3	13,529,291	9,163,605	7,903,032	8,078,912
Central Vermont	Oct.	419	593,852	75,989	755,858	114,296	108,590	19,323	315,238	26,267	586,037	77.5	169,821	153,838	168,137	137,494
	10 mos.	416	5,663,581	1,028,650	7,621,334	1,492,054	986,135	185,214	2,927,426	254,962	5,867,419	77.0	1,753,915	1,579,035	1,621,003	—1,303,781
Chesapeake & Ohio	Oct.	2,735	11,198,726	492,648	12,198,858	1,851,182	2,653,490	143,509	2,901,678	299,870	7,867,753	64.5	4,331,105	3,555,604	3,769,610	4,537,647
	10 mos.	2,732	98,689,971	5,408,698	108,521,975	16,051,532	24,086,494	1,363,814	27,047,821	2,931,487	71,659,756	66.0	36,862,219	29,802,452	31,753,845	29,766,669
Chicago & Alton	Oct.	1,028	1,835,600	425,969	2,543,672	365,436	579,467	83,283	879,270	62,227	1,969,537	77.4	574,135	459,307	317,815	383,324
	10 mos.	1,028	17,030,882	4,546,504	24,440,232	2,934,190	5,311,786	781,843	8,753,371	610,831	18,517,472	75.8	5,922,760	4,797,912	3,028,425	2,228,486
Chicago & Eastern Illinois	Oct.	946	1,800,360	237,965	2,239,793	270,072	469,571	84,011	822,314	71,457	1,731,293	77.3	508,500	352,776	218,850	417,759
	10 mos.	946	16,552,635	2,848,518	21,504,399	2,651,875	4,436,735	826,131	7,799,841	711,404	16,566,638	77.0	4,937,761	3,568,893	2,057,791	1,565,359
Chicago & Illinois Midland	Oct.	131	279,355	4,468	294,154	50,173	55,745	19,794	79,905	16,800	221,602	75.3	72,552	56,597	55,885	50,360
	10 mos.	131	2,361,738	54,044	2,498,701	376,312	535,873	192,273	699,402	177,382	1,979,398	79.2	519,303	431,933	419,191	372,422
Chicago & North Western	Oct.	8,450	11,654,763	1,617,872	14,870,351	1,972,350	2,442,360	211,327	5,093,945	398,650	10,113,096	68.0	4,757,255	3,803,921	3,442,758	3,529,972
	10 mos.	8,465	96,483,100	20,121,495	132,416,763	17,887,304	24,159,465	2,198,988	47,679,243	3,848,282	96,311,770	72.7	36,104,993	27,679,797	25,220,388	22,212,319

Revenues and Expenses of Railways

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1929—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of—Way and structures.	Maintenance of—Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Chicago, Burlington & Quincy	Oct.	9,373	$13,257,322	$1,485,082	$16,168,779	$2,249,639	$2,425,119	$254,774	$4,573,597	$390,512	$9,977,692	61.7	$6,191,087	$4,901,950	$4,531,386	$4,824,666
	10 mos.	9,374	107,242,535	16,013,337	137,340,527	20,561,312	21,147,159	2,823,840	43,255,104	3,724,228	92,475,794	67.3	44,864,733	33,728,769	31,010,846	28,400,210
Chicago Great Western	Oct.	1,495	2,137,407	206,784	2,528,544	341,326	388,902	83,477	901,396	61,173	1,788,123	70.7	740,421	635,636	454,971	454,564
	10 mos.	1,495	17,454,234	2,389,648	21,699,570	2,875,418	3,742,156	826,739	8,678,214	575,773	16,799,373	77.4	4,900,197	4,019,929	2,336,749	2,066,338
Chicago, Indianapolis & Louisville	Oct.	650	1,328,279	162,287	1,651,781	192,123	309,819	43,841	533,968	39,653	1,130,107	68.4	521,674	416,352	304,207	313,255
	10 mos.	650	12,016,596	1,641,584	15,370,417	1,582,407	3,129,168	402,125	5,319,198	370,719	10,927,589	71.1	4,442,828	3,517,995	2,286,877	2,247,410
Chicago, Mil., St. Paul & Pacific	Oct.	11,247	13,686,930	1,228,826	16,466,303	2,499,617	2,684,091	310,541	5,304,754	400,361	11,246,791	68.3	5,219,512	4,258,474	3,535,470	4,780,843
	10 mos.	11,248	117,404,398	14,186,111	146,232,065	24,657,760	26,012,420	3,260,516	50,694,576	3,791,473	109,123,506	74.6	37,108,559	28,853,249	23,104,477	24,589,625
Chicago River & Indiana	Oct.	20	.....	.....	674,399	39,319	57,465	428	228,700	15,261	341,173	50.6	333,226	276,683	370,381	365,419
	10 mos.	20	.....	.....	5,956,616	466,629	529,028	5,142	2,127,378	149,484	3,277,661	55.0	2,678,955	2,226,023	3,088,741	2,809,395
Chicago, Rock Island & Pacific	Oct.	7,592	10,344,154	1,464,770	13,000,106	1,765,304	2,266,904	284,100	4,228,073	358,595	8,974,045	69.0	4,026,061	3,376,560	2,952,929	2,727,448
	10 mos.	7,562	91,135,896	15,555,874	117,562,193	16,384,402	22,310,077	2,650,016	41,483,281	3,545,326	87,182,842	74.2	30,379,351	23,548,526	18,824,268	18,784,620
Chicago, Rock Island & Gulf	Oct.	566	660,678	61,638	779,618	71,161	52,306	21,221	197,898	18,248	363,519	46.6	416,099	363,906	316,510	216,746
	10 mos.	538	5,636,483	633,052	6,799,817	675,917	595,690	214,311	2,075,412	188,278	3,779,628	55.6	3,020,189	2,734,473	2,326,484	1,452,123
Chicago, St. Paul, Minn. & Omaha	Oct.	1,746	2,060,224	294,595	2,560,836	327,790	421,885	40,700	971,918	85,607	1,864,734	72.8	696,102	547,002	479,061	392,467
	10 mos.	1,746	17,383,194	3,444,493	22,925,843	3,272,512	3,999,459	396,320	9,379,224	818,493	17,986,649	78.5	4,939,194	3,770,360	3,087,196	1,866,117
Clinchfield Railroad	Oct.	309	566,728	11,581	590,301	54,248	150,407	21,493	115,731	22,015	364,010	61.7	226,291	166,272	311,557	350,515
	10 mos.	309	5,493,523	140,285	5,752,387	623,384	1,444,558	219,435	1,176,662	185,811	3,649,500	63.4	2,102,887	1,382,723	2,280,107	2,458,215
Colorado & Southern	Oct.	1,035	1,167,067	78,463	1,347,149	134,910	196,477	14,027	398,857	43,259	791,536	58.8	555,613	458,636	422,765	309,689
	10 mos.	1,035	8,115,981	964,795	9,975,206	1,655,528	2,131,407	157,094	3,414,914	420,675	7,808,805	78.3	2,166,401	1,446,101	1,176,537	1,466,077
Ft. Worth & Denver City	Oct.	696	1,007,224	146,771	1,232,623	135,406	162,420	18,343	315,569	40,495	672,745	54.6	559,878	460,781	431,996	476,435
	10 mos.	696	8,204,200	1,448,099	10,353,888	1,340,304	1,659,694	223,611	2,979,113	394,809	6,637,035	64.1	3,716,853	3,079,019	2,871,541	2,838,266
Wichita Valley	Oct.	271	158,323	8,127	176,887	28,907	6,875	21	45,392	2,243	82,583	45.7	94,304	83,753	59,004	78,775
	10 mos.	271	1,073,964	86,010	1,227,834	229,381	81,378	287	391,810	16,857	716,069	58.3	511,765	438,301	219,333	288,967
Columbus & Greenville	Oct.	167	202,758	17,743	234,293	26,120	22,963	3,310	66,242	11,425	130,060	55.5	104,233	87,469	73,199	63,681
	10 mos.	167	1,303,418	167,427	1,574,948	343,802	181,762	36,823	538,615	116,646	1,214,660	77.1	360,288	305,436	184,923	78,079
Conemaugh & Black Lick	Oct.	23	118,200	.....	199,111	13,460	27,324	1,053	98,466	3,513	143,816	72.2	55,295	54,295	54,022	59,439
	10 mos.	23	1,049,872	.....	1,864,937	164,676	288,255	7,410	973,292	34,024	1,467,657	78.7	397,280	367,280	365,218	221,760
Delaware & Hudson	Oct.	881	3,564,626	227,344	4,022,136	430,517	798,021	57,632	1,249,206	166,583	2,717,992	67.6	1,304,144	1,214,615	1,273,876	963,769
	10 mos.	881	29,342,928	2,848,302	34,692,507	4,153,584	7,943,295	570,390	12,428,752	1,634,008	26,851,432	77.4	7,841,075	6,949,072	6,937,867	5,253,365
Delaware, Lackawanna & Western	Oct.	998	5,788,371	890,942	7,571,202	559,248	1,239,547	144,954	2,737,946	176,891	4,851,092	64.1	2,720,110	2,035,687	2,067,904	2,167,144
	10 mos.	998	50,784,012	9,486,240	68,677,667	6,503,779	12,028,519	1,438,247	26,350,018	1,777,781	48,385,669	70.5	20,291,993	14,438,414	14,590,234	13,532,775
Denver & Rio Grande Western	Oct.	2,563	3,497,514	255,399	3,981,104	609,398	575,855	58,549	1,139,391	95,642	2,510,134	63.1	1,470,970	1,220,808	1,174,152	1,111,748
	10 mos.	2,557	23,482,015	3,020,601	28,906,893	4,765,135	5,383,351	624,971	8,329,460	913,172	20,390,474	70.5	8,516,419	6,568,372	7,214,422	5,470,161
Denver & Salt Lake	Oct.	232	388,559	11,571	419,265	54,534	73,530	2,194	59,458	14,814	200,480	47.8	218,785	204,770	209,968	147,133
	10 mos.	232	2,691,715	167,977	3,135,178	588,491	655,033	22,488	490,490	139,615	1,878,395	59.9	1,256,783	1,144,746	1,213,689	1,114,878
Detroit & Mackinac	Oct.	273	132,691	7,249	152,296	39,098	27,665	2,194	42,626	5,878	109,789	72.1	42,507	33,000	34,341	30,774
	10 mos.	287	1,179,625	107,264	1,406,640	317,649	291,418	22,430	410,927	62,432	1,058,497	75.3	348,143	263,754	281,169	176,475
Detroit & Toledo Shore Line	Oct.	50	382,838	.....	394,067	41,217	35,496	46,841	93,781	26,367	243,276	61.7	150,791	116,561	40,251	103,766
	10 mos.	50	4,179,438	.....	4,258,676	407,467	369,787	368,872	1,013,772	206,690	2,363,755	55.5	1,894,921	1,542,037	725,709	951,409
Detroit Terminal	Oct.	19	.....	.....	163,363	20,416	13,856	.....	81,642	4,460	120,374	73.7	42,989	25,651	26,181	64,469
	10 mos.	19	.....	.....	2,227,677	228,522	197,583	1	962,949	44,023	1,433,078	64.3	794,599	592,408	598,616	548,776
Detroit, Toledo & Ironton	Oct.	488	1,027,190	2,851	1,052,018	176,558	125,885	11,914	302,545	35,237	648,728	61.7	403,290	396,831	349,212	416,564
	10 mos.	494	12,218,348	31,536	12,513,426	1,581,248	1,651,140	119,278	2,947,620	318,295	6,599,165	52.7	5,914,261	5,292,538	4,484,570	1,952,617
Duluth & Iron Range	Oct.	269	654,576	3,682	751,752	91,763	118,340	818	163,820	20,736	395,477	52.6	356,275	297,213	297,956	481,633
	10 mos.	269	5,979,084	45,420	6,887,706	1,031,108	1,107,439	14,742	1,500,452	218,472	3,871,515	56.2	3,016,191	2,511,107	2,521,673	1,983,001
Duluth, Missabe & Northern	Oct.	305	2,130,827	3,066	2,411,931	159,368	190,572	2,890	373,190	25,148	751,153	31.1	1,660,778	1,431,873	1,432,671	1,522,467
	10 mos.	306	17,268,970	37,547	19,619,044	1,503,828	1,840,625	29,615	2,997,586	235,413	6,606,706	33.7	13,012,338	11,120,810	11,101,645	8,350,916
Duluth, Winnipeg & Pacific	Oct.	178	167,563	15,405	202,252	26,130	56,706	4,517	66,559	8,118	164,292	81.2	37,960	27,621	20,119	11,985
	10 mos.	178	1,862,186	145,957	2,119,379	439,402	443,044	48,528	725,121	82,768	1,771,299	83.6	348,080	239,569	246,912	265,337
Elgin, Joliet & Eastern	Oct.	453	1,989,470	49	2,198,565	249,740	93,416	16,067	779,423	54,016	1,192,155	54.2	1,006,410	839,882	635,770	426,894
	10 mos.	453	20,677,203	220	22,725,865	2,151,416	3,509,685	152,751	7,693,261	530,725	14,026,521	61.7	8,699,344	7,356,354	5,343,121	3,911,700
Erie Railroad	Oct.	2,046	9,453,577	793,173	11,138,549	1,295,520	2,399,231	184 816	3,969,270	312,425	8,196,785	73.6	2,941,764	2,415,343	2,340,443	2,774,437
	10 mos.	2,046	79,551,199	8,744,311	96,636,135	11,586,635	22,215,859	1,836,625	35,620,638	3,065,930	74,787,727	77.4	21,848,408	17,328,008	16,838,708	15,192,540
Chicago & Erie	Oct.	269	1,334,195	48,135	1,512,700	164,163	139,433	28,711	424,727	44,890	799,383	52.8	713,317	654,324	313,946	199,864
	10 mos.	269	11,565,030	543,046	13,244,993	1,618,350	1,384,107	299,143	3,699,749	429,021	7,421,164	56.0	5,823,829	5,256,619	2,267,739	1,440,226
New Jersey & New York	Oct.	45	35,628	93,563	135,371	18,160	17,676	2,373	71,480	3,771	113,460	83.8	21,911	17,796	—15,554	—12,917
	10 mos.	45	275,451	963,180	1,297,905	188,773	217,464	18,525	687,372	37,406	1,149,493	88.6	148,412	107,303	—224,626	—205,812
N. Y., Susquehanna & Western	Oct.	131	421,565	39,480	499,034	57,038	65,218	5,400	195,291	10,417	333,342	66.8	165,692	134,276	115,908	144,540
	10 mos.	131	3,415,985	427,943	4,220,192	585,787	539,969	52,423	1,845,772	124,447	3,148,218	74.6	1,071,974	760,465	528,565	374,902

Revenues and Expenses of Railways

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1929—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Evansville, Indianapolis & Terre Haute	Oct.	146	$140,742	$2,936	$152,448	$30,077	$20,091	$2,060	$57,265	$4,645	$114,138	74.9	$38,310	$34,182	—$225	$8,019
	10 mos.	146	1,503,249	33,416	1,612,990	267,935	198,883	19,231	563,840	49,465	1,099,063	68.1	513,927	462,738	144,694	4,276
Florida East Coast	Oct.	853	458,072	161,606	717,952	297,600	192,977	29,111	263,048	46,588	841,288	117.2	—123,336	—267,867	—308,597	—121,379
	10 mos.	853	6,278,606	3,547,794	11,302,581	1,686,130	1,792,774	285,774	3,183,290	474,407	7,623,076	67.4	3,679,505	2,227,976	1,568,981	1,273,775
Fort Smith & Western	Oct.	249	159,303	9,448	177,153	26,501	27,146	5,988	46,395	6,840	111,926	63.2	65,227	60,497	51,894	53,954
	10 mos.	249	1,063,064	90,619	1,245,376	245,250	250,029	58,877	402,174	71,579	1,021,790	82.1	223,586	176,305	85,457	35,324
Galveston Wharf	Oct.	13	.....	.....	235,441	42,181	4,816	4,109	42,981	8,093	121,259	51.5	114,182	72,382	72,980	122,997
	10 mos.	13	.....	.....	1,892,585	433,320	50,927	43,976	336,532	62,927	1,109,450	58.6	783,135	525,735	527,539	610,015
Georgia	Oct.	328	381,785	49,270	474,482	68,564	78,623	23,352	193,611	23,644	388,146	81.8	86,336	75,470	84,157	134,828
	10 mos.	328	3,566,408	540,195	4,445,185	545,961	832,646	225,708	1,843,829	237,379	3,685,385	82.9	759,800	650,493	785,521	761,437
Georgia & Florida	Oct.	502	106,231	4,420	118,496	18,058	17,115	8,956	45,336	9,074	98,764	83.3	19,732	10,030	14,407	10,829
	10 mos.	473	1,268,052	94,220	1,453,962	264,054	220,240	97,696	570,940	86,403	1,230,193	84.6	223,769	126,642	150,535	166,088
Grand Trunk Western	Oct.	345	1,575,803	164,855	1,841,411	309,463	390,563	41,565	611,064	69,913	1,438,556	78.1	402,855	309,130	222,830	326,458
	10 mos.	345	16,416,740	1,777,910	19,237,428	2,844,714	3,822,179	445,861	6,336,470	652,104	14,146,698	73.5	5,090,730	4,157,303	3,055,879	3,058,924
Atlantic & St. Lawrence	Oct.	166	139,648	17,424	176,597	52,930	52,294	5,657	107,784	7,802	228,365	129.3	—51,768	—66,437	—116,120	—63,322
	10 mos.	166	1,510,736	252,232	1,972,240	507,771	451,218	60,570	996,684	84,668	2,117,020	107.3	—144,780	—297,440	—809,817	—922,364
Chic., Det. & Canada Gr. Tr. Jct.	Oct.	59	236,184	1,373	285,206	30,468	12,937	4,311	95,147	4,132	146,984	51.5	138,222	126,960	98,932	170,679
	10 mos.	59	2,835,959	11,044	3,308,671	220,644	150,564	46,665	969,280	37,319	1,424,219	43.0	1,884,452	1,772,506	1,469,907	1,539,701
Detroit, Grand Haven & Mil.	Oct.	192	623,290	16,630	698,994	77,911	59,401	12,930	269,084	19,941	438,707	62.8	260,287	245,337	145,688	130,138
	10 mos.	192	6,998,584	237,797	7,773,205	749,460	625,260	139,398	2,860,449	182,302	4,522,084	58.2	3,251,121	3,112,710	1,939,236	1,705,183
Great Northern	Oct.	8,367	12,337,871	822,033	14,243,944	1,574,830	1,907,533	266,583	3,791,175	250,712	7,905,702	55.5	6,338,242	5,460,060	5,002,549	6,487,746
	10 mos.	8,391	87,347,062	9,472,558	108,459,226	16,683,771	17,363,962	2,632,234	32,076,761	2,304,409	72,139,068	66.5	36,320,158	28,738,581	27,564,789	25,343,452
Green Bay & Western	Oct.	234	187,235	2,477	195,566	33,231	35,309	7,996	65,194	3,028	145,358	74.3	50,208	39,208	33,903	35,237
	10 mos.	234	1,575,087	46,065	1,678,738	280,44.	251,443	69,119	631,931	31,429	1,263,346	75.3	415,392	327,344	273,889	236,842
Gulf & Ship Island	Oct.	307	234,169	28,074	286,294	67,415	49,092	5,069	99,862	7,094	231,240	80.8	55,054	21,387	7,000	8,760
	10 mos.	307	2,164,033	352,756	2,747,719	614,560	498,441	51,173	1,013,837	77,897	2,287,847	83.3	459,872	135,813	—17,369	230
Gulf, Mobile & Northern	Oct.	733	737,731	28,161	797,377	90,120	99,817	34,446	198,166	29,308	452,185	56.71	345,192	284,879	233,710	191,895
	10 mos.	733	5,907,872	265,736	6,482,348	930,987	972,567	328,322	1,857,380	291,839	4,384,462	67.64	2,097,886	1,641,229	1,272,095	1,061,866
Hocking Valley	Oct.	348	1,758,075	51,577	2,021,158	223,695	337,923	16,451	501,070	50,359	1,126,042	55.7	895,116	758,936	658,274	868,702
	10 mos.	348	15,412,823	548,020	17,693,995	2,132,975	3,197,791	166,071	4,669,823	456,685	10,609,047	60.0	7,084,948	5,782,340	5,082,503	4,660,378
Illinois Central	Oct.	5,019	11,718,877	1,531,669	14,327,977	1,879,421	3,197,293	269,055	4,786,560	374,044	10,593,054	73.9	3,734,923	2,663,730	2,564,296	3,210,813
	10 mos.	5,029	102,486,596	17,211,805	129,663,753	16,152,524	30,534,787	2,617,509	45,219,068	3,626,208	99,135,271	76.5	30,528,482	21,403,723	21,033,656	21,241,572
Yazoo & Mississippi Valley	Oct.	1,705	2,678,882	300,014	3,149,949	449,020	493,001	46,894	956,746	67,472	2,020,073	64.1	1,129,876	970,730	871,963	808,782
	10 mos.	1,705	18,679,192	2,635,708	22,741,041	3,970,395	4,353,868	441,663	8,483,861	651,953	17,963,139	79.0	4,777,902	3,104,046	2,344,222	2,129,894
Illinois Central System	Oct.	6,724	14,413,809	1,836,529	17,498,824	2,328,441	3,693,768	315,949	5,752,878	441,646	12,626,303	72.2	4,872,521	3,641,266	3,443,065	4,024,774
	10 mos.	6,734	121,300,457	19,885,740	152,577,703	20,122,919	34,945,145	3,059,172	53,790,781	4,279,535	117,244,126	76.8	35,333,577	24,525,802	23,395,911	23,347,450
Illinois Terminal	Oct.	473	473,818	119,230	622,102	112,907	83,701	15,247	201,158	36,262	446,855	71.83	175,247	153,058	103,643	89,826
	10 mos.	473	4,501,003	1,275,063	6,040,617	868,611	871,026	187,887	1,984,717	367,039	4,267,728	70.65	1,772,889	1,559,214	1,150,929	901,579
Kansas City Southern	Oct.	784	1,561,938	77,791	1,841,625	205,259	292,786	65,285	451,264	94,372	1,111,426	60.4	730,199	612,479	551,920	492,831
	10 mos.	784	13,319,054	885,394	15,984,783	1,939,292	2,628,021	628,824	4,560,281	855,513	10,627,678	66.5	5,357,105	4,180,360	3,582,473	3,322,532
Texarkana & Ft. Smith	Oct.	81	243,964	6,755	275,903	34,826	15,189	7,424	58,221	11,466	129,346	46.9	146,557	129,724	92,970	109,600
	10 mos.	81	2,377,159	69,648	2,656,370	257,675	229,330	75,158	589,187	111,316	1,281,997	48.3	1,374,373	1,197,171	859,199	716,696
Kansas, Oklahoma & Gulf	Oct.	326	344,562	2,576	353,168	51,428	29,192	15,489	70,937	10,416	175,440	49.7	177,728	149,802	119,025	122,068
	10 mos.	326	2,986,286	25,981	3,079,742	370,063	289,427	149,120	666,460	108,980	1,560,838	50.7	1,518,904	1,310,756	1,078,862	729,495
Lake Superior & Ishpeming	Oct.	160	291,851	491	340,172	38,948	35,587	676	60,191	6,439	141,836	41.7	198,336	163,517	160,695	159,459
	10 mos	160	2,491,797	10,075	2,893,112	404,435	276,979	5,295	568,011	73,363	1,327,893	45.9	1,565,219	1,271,703	1,234,434	737,456
Lake Terminal	Oct.	12	.....	.....	113,423	10,152	13,541	.....	63,020	1,909	88,622	78.1	24,801	17,938	16,875	11,899
	10 mos.	12	.....	.....	1,062,026	136,341	147,337	.....	526,483	21,625	831,786	78.3	230,240	161,515	181,593	46,907
Lehigh & Hudson River	Oct.	96	262,842	1,136	274,445	23,719	32,830	2,604	79,015	10,679	148,847	54.2	125,598	103,360	82,870	87,193
	10 mos	96	2,083,942	12,471	2,210,769	288,262	331,248	26,479	747,435	98,962	1,492,386	67.5	718,383	566,361	386,880	427,468
Lehigh & New England	Oct.	216	584,060	840	594,285	64,663	97,250	4,956	177,731	15,480	359,911	60.6	234,374	206,469	186,487	176,716
	10 mos.	216	4,194,488	9,826	4,274,096	517,078	931,781	59,959	1,471,689	167,402	3,146,807	73.6	1,127,289	975,381	927,753	980,839
Lehigh Valley	Oct.	1,361	6,006,766	489,717	7,023,871	439,455	1,393,839	144,474	2,559,456	145,058	4,714,833	67.1	2,309,038	1,900,796	1,751,570	2,033,129
	10 mos.	1,361	50,437,434	5,492,625	60,902,083	5,139,867	12,668,882	1,440,856	23,738,866	1,491,904	44,802,351	73.6	16,099,732	12,755,893	11,453,539	10,234,089
Louisiana & Arkansas	Oct.	636	767,167	23,909	819,322	115,676	129,788	18,405	203,886	22,598	487,772	59.5	331,550	263,017	192,761	186,595
	10 mos.	636	6,137,301	225,001	6,630,586	1,105,495	988,418	226,903	1,912,338	231,488	4,436,581	66.9	2,194,005	1,643,226	1,161,041	834,364
Louisiana Ry. & Nav. Co. of Texas	Oct.	206	118,853	3,215	126,003	30,277	15,226	7,173	40,939	5,745	97,561	77.4	28,442	24,442	10,944	10,239
	10 mos.	206	829,495	27,427	901,423	247,829	137,374	31,561	381,306	55,039	851,310	94.4	50,113	—12,700	—140,375	—157,981
Louisville & Nashville	Oct.	5,249	10,313,269	1,136,266	12,236,028	1,816,820	2,687,494	240,850	3,983,808	371,701	9,140,533	74.7	3,095,495	2,342,092	2,500,727	3,093,088
	10 mos.	5,249	91,585,660	13,188,328	112,246,823	18,315,417	25,598,928	2,432,395	38,601,876	3,828,310	89,249,776	79.5	22,997,047	16,525,993	17,251,536	18,835,989

Revenues and Expenses of Railways

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1929—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
Maine Central	Oct.	1,121	$1,633,910	$206,671	$2,019,378	$257,722	$387,688	$15,408	$646,403	$48,567	$1,356,841	67.2	$662,537	$519,038	$493,546	$342,496
	10 mos.	1,122	12,277,309	2,656,834	17,046,430	2,442,849	3,377,775	184,101	6,127,154	520,450	12,675,052	74.4	4,371,378	3,434,642	3,066,764	2,309,292
Midland Valley	Oct.	364	339,146	11,130	360,690	67,011	35,292	5,629	80,595	10,689	198,921	55.2	161,769	143,759	114,993	126,902
	10 mos.	364	2,784,788	116,190	3,011,179	540,984	302,222	60,800	749,156	114,643	1,739,699	57.8	1,271,480	1,115,974	892,249	936,969
Minneapolis & St. Louis	Oct.	1,627	1,293,739	52,230	1,426,542	149,733	258,601	37,307	579,783	44,296	1,069,349	75.0	357,193	284,119	231,444	359,438
	10 mos.	1,627	10,977,672	678,086	12,495,305	1,657,684	2,043,267	361,126	5,411,608	463,741	9,934,698	79.5	2,560,607	1,907,400	1,818,282	434,410
Minn., St. Paul & S. S. Marie	Oct.	4,380	3,996,765	309,908	4,736,863	591,766	752,903	82,858	1,511,785	135,366	3,097,606	65.4	1,639,257	1,463,344	1,244,638	2,137,281
	10 mos.	4,380	33,925,621	3,999,645	41,609,946	5,569,080	7,483,926	816,573	14,552,556	1,225,532	29,885,746	71.8	11,724,200	9,235,119	7,723,235	7,441,301
Duluth, South Shore & Atlantic	Oct.	573	369,226	37,221	448,967	75,652	68,387	8,046	170,318	10,407	335,660	74.8	113,307	82,307	66,449	34,061
	10 mos.	573	3,377,762	530,386	4,293,115	762,227	701,743	77,207	1,738,894	109,790	3,411,999	79.5	881,116	567,114	402,931	288,838
Spokane International	Oct.	165	90,451	8,434	113,040	17,424	9,015	4,117	31,744	7,584	70,984	62.8	42,056	37,866	28,421	18,948
	10 mos.	165	830,198	87,775	1,072,113	187,017	94,856	36,596	337,610	67,657	734,300	68.5	337,813	284,356	217,645	201,158
Mississippi Central	Oct.	148	139,467	7,184	152,070	24,029	26,537	10,136	37,511	8,077	106,290	69.9	45,780	32,879	40,263	42,123
	10 mos.	153	1,278,250	65,558	1,400,281	188,545	265,049	96,047	360,005	82,254	991,554	70.8	408,727	302,233	326,720	326,564
Missouri & North Arkansas	Oct.	364	183,117	9,179	216,314	55,751	40,448	10,417	77,860	8,868	193,917	89.6	22,397	19,989	—202	4,429
	10 mos.	364	1,422,281	101,475	1,641,480	391,518	273,428	97,759	605,097	87,723	1,457,585	88.8	183,895	158,057	18,959	—35,418
Missouri-Illinois	Oct.	202	236,534	1,723	243,092	35,759	34,443	3,462	59,639	6,480	139,230	57.3	103,862	88,934	72,508	45,111
	10 mos.	202	1,902,729	16,759	1,975,945	252,133	326,833	34,821	534,385	84,124	1,229,925	62.2	746,020	619,897	505,932	386,052
Missouri-Kansas-Texas Lines	Oct.	3,188	4,553,980	483,796	5,479,874	760,712	887,282	127,180	1,379,523	177,507	3,336,015	60.9	2,143,859	1,812,741	1,564,602	1,425,672
	10 mos.	3,188	37,612,596	5,223,944	47,199,742	6,840,731	8,602,201	1,259,719	13,531,255	1,719,280	32,079,231	68.0	15,120,511	12,201,040	9,997,758	9,895,304
Missouri Pacific	Oct.	7,444	11,793,764	1,071,157	13,895,556	2,534,838	1,903,056	347,164	4,290,761	411,297	9,467,484	68.1	4,428,072	3,766,529	3,142,193	2,740,768
	10 mos.	7,459	96,757,246	10,999,901	118,335,835	20,545,098	19,487,114	3,198,993	39,032,604	3,916,240	86,427,586	73.0	31,908,249	26,452,927	21,173,815	17,923,403
Gulf Coast Lines	Oct.	1,026	1,085,682	109,926	1,270,897	168,145	212,422	48,693	339,428	64,308	836,623	65.83	434,274	369,950	330,281	283,249
	10 mos.	1,026	10,734,005	1,279,647	12,845,970	2,112,009	2,213,398	463,477	3,613,347	612,505	8,962,582	69.77	3,883,388	3,333,493	2,654,180	2,468,558
International-Great Northern	Oct.	1,159	1,444,405	160,151	1,786,403	232,483	272,508	46,098	587,785	75,507	1,223,503	68.48	562,900	521,377	425,874	595,283
	10 mos.	1,159	12,143,869	1,702,247	15,494,830	2,402,119	2,481,180	404,300	5,946,102	717,349	11,956,555	77.16	3,538,275	3,117,088	2,080,608	2,256,104
San Antonio, Uvalde & Gulf	Oct.	318	105,678	13,346	130,643	40,054	17,871	8,074	52,397	9,324	126,863	97.1	3,780	—1,352	—31,231	—21,898
	10 mos.	318	1,352,230	169,025	1,661,553	377,847	247,366	74,570	488,765	86,407	1,267,526	76.3	394,027	350,762	61,140	214,233
Mobile & Ohio	Oct.	1,159	1,528,105	86,372	1,697,869	221,564	290,047	56,329	539,304	52,662	1,153,472	67.9	544,397	441,676	392,076	414,896
	10 mos.	1,159	13,150,344	871,646	14,899,228	2,214,916	2,756,497	562,609	5,192,956	500,032	11,202,274	75.2	3,696,954	2,806,115	2,340,358	2,106,048
Monongahela	Oct.	171	691,234	9,224	707,123	80,000	75,000	992	171,808	10,894	336,626	47.6	370,497	339,629	225,332	216,609
	10 mos.	171	6,073,068	99,832	6,230,802	800,000	750,000	11,718	1,541,990	111,767	3,208,404	51.5	3,022,398	2,773,538	1,739,353	1,599,779
Monongahela Connecting	Oct.	6	.....	.....	221,980	28,493	34,646	300	92,493	2,942	158,874	71.6	63,106	52,241	39,287	38,714
	10 mos.	6	.....	.....	2,256,766	243,212	353,479	3,001	949,693	38,155	1,587,540	70.3	669,226	552,700	470,345	362,043
Montour	Oct.	56	261,123	.....	262,544	32,650	52,895	1,320	61,087	7,355	154,841	59.0	107,703	105,531	109,287	76,818
	10 mos.	56	2,051,957	2	2,060,462	280,071	496,378	13,358	466,953	72,562	1,324,345	64.3	736,117	718,587	816,255	567,137
Nashville, Chattanooga & St. Louis	Oct.	1,222	1,781,183	212,115	2,177,298	224,095	404,411	69,053	702,989	69,148	1,476,797	67.8	700,501	605,472	626,421	641,123
	10 mos.	1,237	15,638,258	2,478,700	19,858,608	2,325,660	3,906,998	797,252	6,736,896	806,675	14,639,452	73.7	5,219,156	4,304,343	4,393,748	3,711,023
Nevada Northern	Oct.	165	84,754	4,801	103,843	11,888	5,080	733	16,970	4,990	39,817	38.3	64,026	54,147	51,639	62,440
	10 mos.	165	937,657	60,710	1,134,175	123,751	65,626	9,571	169,867	50,442	421,032	37.1	713,143	565,001	548,230	369,587
Newburgh & South Shore	Oct.	6	.....	.....	183,181	25,636	36,132	.....	72,618	5,947	140,333	76.6	42,848	25,325	39,223	42,851
	10 mos.	6	.....	.....	1,707,807	154,545	320,808	.....	682,969	61,743	1,220,065	71.4	487,742	322,052	370,466	301,313
New Orleans Great Northern	Oct.	276	294,430	18,258	323,842	41,965	62,526	16,423	89,188	11,707	221,579	68.4	102,263	80,857	53,902	71,355
	10 mos.	276	2,499,730	174,131	2,774,552	431,154	452,539	138,791	803,247	118,944	1,944,142	70.1	830,410	646,939	396,752	469,253
New Orleans Terminal	Oct.	20	1,082	.....	114,452	21,343	9,347	.....	60,906	1,759	93,347	81.6	21,105	10,098	—1,992	59,278
	10 mos.	20	22,849	.....	1,511,707	186,821	93,755	.....	595,097	17,196	892,861	59.1	618,846	512,863	393,594	380,395
New York Central	Oct.	6,914	23,510,851	7,422,949	36,499,195	5,006,655	8,073,032	520,917	12,094,269	953,407	27,206,680	74.5	9,292,515	6,707,862	6,724,093	7,076,717
	10 mos.	6,914	206,133,179	81,468,330	335,472,661	45,156,735	73,536,476	4,825,504	113,990,607	9,205,273	251,992,090	75.1	83,480,571	59,182,103	57,442,306	53,476,372
Cincinnati Northern	Oct.	244	368,750	2,209	381,135	30,850	62,962	6,273	108,049	10,236	218,369	57.3	162,766	129,818	127,086	93,255
	10 mos.	244	3,061 775	31,660	3,179,824	363,299	648,252	59,860	1,027,202	101,521	2,199,538	69.2	980,286	733,815	658,084	511,998
Cleve., Cinn., Chicago & St. Louis	Oct.	2,397	6,500,396	1,078,922	8,399,306	1,058,675	1,799,096	166,990	2,982,948	249,575	6,343,924	75.5	2,055,382	1,570,979	1,536,599	1,731,626
	10 mos.	2,397	59,131,339	11,768,308	77,915,136	8,682,898	17,011,564	1,584,018	27,820,969	2,397,023	58,347,809	74.9	19,567,327	14,906,301	13,965,765	11,779,182
Indiana Harbor Belt	Oct.	117	.....	.....	1,281,344	80,000	136,368	5,597	445,952	26,298	708,409	55.3	572,935	484,683	425,152	387,289
	10 mos.	118	.....	.....	10,975,485	1,004,000	1,127,272	50,981	4,218,351	274,278	6,798,748	61.9	4,176,737	3,468,578	2,983,130	2,776,292
Michigan Central	Oct.	1,858	5,527,575	1,518,991	8,105,384	948,758	1,751,852	141,047	2,565,161	180,541	5,699,844	70.3	2,405,540	1,895,090	1,824,643	2,429,687
	10 mos.	1,858	55,957,761	16,702,048	81,416,885	8,634,971	16,873,813	1,370,906	25,180,370	1,733,543	54,880,965	67.4	26,535,920	20,975,870	19,671,907	19,506,429
Pittsburgh & Lake Erie	Oct.	231	2,792,997	172,298	3,074,389	368,413	994,539	33,681	976,241	77,449	2,461,036	80.0	613,353	407,153	777,910	834,231
	10 mos.	231	26,198,984	1,862,580	29,237,347	3,435,812	10,132,550	293,501	9,216,817	792,979	23,973,862	82.0	5,263,485	3,436,640	6,981,639	6,317,066
New York, Chicago & St. Louis	Oct.	1,690	4,856,869	141,670	5,211,572	701,017	975,533	125,901	1,765,327	135,393	3,640,545	69.9	1,571,027	1,302,400	1,002,193	1,217,702
	10 mos.	1,690	44,896,998	1,652,140	48,320,461	5,959,110	9,183,909	1,104,266	16,210,207	1,313,864	33,593,004	69.5	14,727,457	12,019,191	9,601,860	7,725,491

Revenues and Expenses of Railways

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1929—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
N. Y., New Haven & Hartford	Oct.	2,133	$7,918,903	$3,812,400	$13,853,545	$2,103,677	$1,945,066	$122,103	$3,806,913	$329,313	$8,469,464	61.1	$5,384,081	$4,663,741	$3,967,851	$3,805,199
	10 mos.	2,131	65,952,489	38,776,904	118,103,310	16,798,413	19,579,013	1,070,692	35,965,678	3,331,857	78,482,071	66.5	39,621,239	32,809,681	27,390,967	23,017,348
New York Connecting	Oct.	20	257,324	.....	306,763	23,154	12,789	.....	37,920	1,640	75,503	24.6	231,260	195,560	168,661	134,387
	10 mos.	20	2,175,644	.....	2,524,908	395,313	97,006	.....	373,153	17,865	883,337	35.0	1,641,571	1,274,171	1,028,913	858,454
New York, Ontario & Western	Oct.	568	865,822	41,988	1,063,803	173,498	217,869	20,521	449,847	33,776	902,526	84.8	161,277	131,237	79,956	90,359
	10 mos.	568	7,083,188	1,807,783	10,547,418	1,512,900	1,975,600	198,210	4,507,832	343,776	8,567,572	81.2	1,979,846	1,544,490	980,943	914,048
Norfolk & Western	Oct.	2,239	10,578,894	382,162	11,404,152	1,274,728	1,781,662	117,821	2,271,714	243,697	5,704,791	50.0	5,699,361	4,599,079	4,881,431	4,286,774
	10 mos.	2,240	90,379,075	4,263,003	97,974,149	11,970,092	17,612,467	1,191,482	21,961,668	2,421,818	55,247,975	56.4	42,726,174	34,068,062	36,492,357	27,053,766
Norfolk Southern	Oct.	931	611,984	26,412	688,848	103,794	102,769	26,894	237,399	29,978	494,365	71.8	194,483	141,586	136,663	170,204
	10 mos.	931	6,070,348	341,172	6,931,856	971,090	988,220	274,472	2,612,854	288,115	5,111,374	73.7	1,820,482	1,306,459	1,135,047	1,359,531
Northern Pacific	Oct.	6,792	8,256,303	652,323	9,803,556	888,578	1,565,438	201,272	2,866,949	261,807	5,900,503	60.2	3,903,053	2,838,491	3,267,828	4,913,603
	10 mos.	6,792	65,371,250	8,338,987	81,918,915	10,927,866	15,535,795	2,318,633	27,114,978	2,597,917	59,697,485	72.9	22,221,430	14,527,688	18,333,374	19,977,894
Northwestern Pacific	Oct.	477	518,875	123,873	681,844	121,078	83,501	7,099	248,806	15,476	475,182	69.7	206,662	170,109	155,051	92,578
	10 mos.	477	3,367,836	1,458,917	5,331,447	1,020,874	877,636	76,443	2,324,681	179,254	4,472,880	83.9	858,567	482,617	434,663	310,781
Pennsylvania R. R.	Oct.	10,498	47,738,656	10,570,818	65,300,488	8,532,133	11,379,333	961,937	21,541,292	1,651,650	44,691,326	68.4	20,609,162	15,857,727	14,653,339	14,252,220
	10 mos.	10,498	412,027,223	108,666,454	579,372,182	73,331,313	109,910,596	9,067,060	195,672,229	16,276,576	410,742,037	70.9	169,630,145	131,753,170	118,760,552	98,011,750
Long Island	Oct.	404	1,204,893	2,111,097	3,578,672	458,253	488,387	26,844	1,404,502	64,053	2,442,505	68.3	1,136,167	885,394	711,856	821,416
	10 mos.	404	9,562,079	23,652,266	35,131,457	4,213,297	4,727,602	217,350	13,058,423	637,651	22,862,771	65.1	12,268,686	9,524,574	7,918,561	6,591,414
West Jersey & Seashore	Oct.	370	499,115	272,444	824,946	119,879	126,795	5,582	345,689	17,063	617,261	74.8	207,685	173,597	135,883	124,705
	10 mos.	370	4,395,868	4,261,904	9,102,877	1,188,040	1,153,490	58,343	3,534,735	171,140	6,126,361	67.3	2,976,516	1,928,341	1,629,472	817,573
Peoria & Pekin Union	Oct.	19	23,374	1,899	170,269	25,071	15,376	5,617	73,037	8,563	127,664	75.0	42,605	24,105	41,125	29,895
	10 mos.	19	199,164	15,583	1,529,461	187,919	132,723	55,456	644,839	84,228	1,105,165	72.3	424,296	267,192	436,710	535,463
Pere Marquette	Oct.	2,241	4,235,429	181,521	4,752,959	500,898	1,018,389	70,258	1,452,818	121,765	3,159,675	66.5	1,593,284	1,304,321	1,134,257	1,587,501
	10 mos.	2,241	36,385,399	2,556,803	41,754,328	4,765,975	8,348,947	667,150	13,289,549	1,241,320	28,257,322	67.7	13,497,006	10,867,174	9,359,168	8,965,353
Pittsburgh & Shawmut	Oct.	102	118,057	2,522	124,901	22,626	40,114	2,133	35,566	7,871	108,310	86.7	16,591	15,319	28,659	40,170
	10 mos.	102	1,215,603	31,813	1,271,172	203,034	329,138	17,529	374,116	80,438	1,004,255	79.0	266,917	253,514	299,143	445,985
Pittsburgh & West Virginia	Oct.	92	326,436	4,000	361,269	69,732	87,974	18,336	67,286	26,125	280,507	77.6	80,762	51,754	164,486	266,957
	10 mos.	92	3,763,834	40,929	4,124,210	374,260	830,554	175,141	725,505	244,902	2,455,139	59.5	1,669,071	1,222,569	2,039,069	1,886,018
Pittsburgh, Shawmut & Northern	Oct.	198	168,681	972	174,876	31,470	24,468	1,683	52,132	6,133	115,888	66.3	58,988	55,974	44,601	12,351
	10 mos.	198	1,445,460	12,124	1,501,808	342,763	274,633	16,600	471,292	62,915	1,168,203	77.8	333,605	303,624	221,260	250,809
Quincy, Omaha & Kansas City	Oct.	249	82,223	8,164	97,819	30,549	8,996	802	32,566	2,497	75,205	76.9	22,614	17,725	14,172	—12,410
	10 mos.	249	500,820	88,715	659,903	249,222	87,664	7,813	279,819	26,724	650,068	98.5	9,835	—38,764	—65,427	—179,625
Reading	Oct.	1,459	8,099,089	565,053	9,205,464	1,348,493	1,792,895	101,464	3,102,049	217,972	6,589,609	71.6	2,615,855	2,088,984	2,190,630	2,566,213
	10 mos.	1,459	69,503,389	5,874,604	81,110,480	11,910,200	18,312,136	946,890	29,618,955	2,204,742	63,279,744	78.0	17,830,736	13,985,458	14,236,416	13,526,082
Atlantic City	Oct.	163	186,750	86,731	303,357	94,281	10,747	2,995	179,043	3,912	291,066	95.9	12,291	—28,351	—46,049	—110,335
	10 mos.	163	1,337,526	1,933,784	3,533,134	650,050	228,327	44,513	1,857,056	47,629	2,839,144	80.4	693,990	292,874	41,125	—472,918
Richmond, Fredericksburg & Potomac	Oct.	117	397,439	234,060	806,486	101,120	164,440	10,271	294,031	36,732	621,799	77.1	184,687	138,278	111,233	141,544
	10 mos.	117	5,117,322	3,084,013	9,961,732	1,258,853	1,666,841	99,385	3,280,791	367,532	6,875,057	69.0	3,086,675	2,496,725	2,023,516	1,503,891
Rutland	Oct.	413	347,340	87,008	602,453	113,845	94,881	12,048	197,542	17,119	435,593	72.3	166,860	129,331	135,688	90,169
	10 mos.	413	3,017,669	879,076	5,326,588	975,582	988,003	109,807	1,947,662	168,274	4,206,581	79.0	1,120,007	822,027	899,033	843,173
St. Louis-San Francisco	Oct.	5,304	6,957,673	857,474	8,414,035	1,222,664	1,396,779	133,313	2,516,089	237,842	5,461,342	64.9	2,952,693	2,454,377	2,418,573	2,396,006
	10 mos.	5,304	56,759,352	8,912,212	71,867,708	9,718,273	14,088,347	1,325,831	23,000,544	2,346,705	49,892,232	69.4	21,975,476	17,569,028	18,004,741	17,106,384
Ft. Worth & Rio Grande	Oct.	233	97,767	5,508	116,950	55,858	18,312	3,337	46,637	5,241	129,355	110.6	—12,405	—16,701	—28,022	6,907
	10 mos.	233	831,620	71,035	1,040,552	341,182	180,674	34,332	439,881	52,670	1,047,377	100.7	—6,825	—51,386	—140,183	—105,038
St. Louis-San Francisco & Texas	Oct.	154	164,739	10,364	182,946	33,415	28,483	5,800	59,671	8,583	135,938	74.3	47,008	44,355	21,613	1,650
	10 mos.	154	1,440,047	110,784	1,631,717	293,405	262,146	54,994	569,651	78,461	1,257,255	77.1	374,462	345,344	73,712	9,189
St. Louis Southwestern	Oct.	950	1,644,544	63,711	1,805,335	215,722	218,027	74,166	406,390	60,628	974,209	54.0	831,126	718,412	614,275	608,850
	10 mos.	941	14,051,560	626,249	15,491,884	1,741,542	2,229,742	711,321	3,880,024	660,294	9,316,944	60.1	6,174,940	5,441,128	4,183,818	3,531,227
St. Louis Southwestern of Texas	Oct.	807	738,295	39,717	850,965	352,232	129,143	32,456	280,977	34,836	840,285	98.7	10,680	—16,993	11,862	182,117
	10 mos.	807	5,492,205	368,401	6,558,626	2,718,457	1,289,432	298,555	2,812,982	352,138	7,562,855	115.3	—1,004,229	—1,283,190	—1,026,861	—108,869
San Diego & Arizona	Oct.	156	79,013	11,212	94,852	20,312	18,000	4,213	23,847	9,871	77,537	81.7	17,315	11,931	11,955	15,791
	10 mos.	156	878,071	169,919	1,089,318	193,174	177,011	40,803	278,384	86,700	789,846	72.5	299,472	242,648	244,460	187,887
Seaboard Air Line	Oct.	4,490	3,529,542	443,807	4,474,721	724,148	861,049	203,233	1,608,572	184,905	3,584,915	80.1	889,806	614,134	621,887	956,847
	10 mos.	4,490	37,751,239	5,978,442	48,930,636	6,132,094	8,553,866	1,993,575	16,977,333	1,772,989	35,895,058	73.4	13,035,578	9,851,489	9,101,069	8,148,439
Southern Ry.	Oct.	6,730	10,394,235	1,657,478	13,130,016	1,818,007	2,276,713	244,765	4,157,994	411,080	8,989,383	68.5	4,140,633	3,217,821	3,112,503	3,692,914
	10 mos.	6,730	91,146,542	18,460,782	120,847,693	18,103,634	21,642,858	2,443,265	39,146,789	3,808,279	85,874,886	71.1	34,972,807	26,806,843	26,003,566	24,719,438
Alabama Great Southern	Oct.	314	793,215	116,497	981,517	167,168	176,287	21,003	259,240	25,982	656,425	66.9	325,092	249,694	250,985	279,228
	10 mos.	314	6,794,301	1,339,841	8,851,145	1,500,540	1,744,168	213,375	2,447,258	246,093	6,218,888	70.3	2,632,257	1,938,775	2,167,533	1,922,153
Cinn., New Orleans & Texas Pacific	Oct.	338	1,713,232	192,437	2,012,800	324,549	427,866	44,167	500,049	56,038	1,359,887	67.6	652,913	533,372	552,726	515,504
	10 mos.	338	15,595,416	2,514,600	19,376,114	4,400,130	4,179,789	440,145	5,180,329	537,796	14,847,671	76.6	4,528,443	3,568,336	3,433,455	4,220,369

Revenues and Expenses of Railways

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1929—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1928.
						Maintenance of—										
			Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Georgia Southern & Florida	Oct.	397	$237,346	$60,558	$326,059	$73,635	$91,839	$1,827	$119,047	$2,810	$292,889	89.8	$33,170	$9,885	$24,169	$56,623
	10 mos.	397	2,337,639	886,422	3,608,400	741,568	835,517	36,526	1,330,347	47,021	3,046,619	84.4	561,781	327,705	385,063	156,214
New Orleans & Northeastern	Oct.	204	455,920	54,492	539,412	61,355	77,800	11,513	147,621	15,414	317,531	58.9	221,881	166,382	125,252	105,745
	10 mos.	204	3,770,976	631,483	4,801,134	631,322	828,726	116,009	1,336,811	150,350	3,102,063	64.6	1,699,071	1,205,466	813,221	686,936
Northern Alabama	Oct.	110	123,177	4,987	132,655	24,966	3,187	1,642	32,652	2,813	65,271	49.2	67,384	61,396	39,344	15,501
	10 mos.	110	939,354	53,260	1,034,447	225,433	34,886	20,653	304,497	27,765	613,284	59.3	421,163	351,684	163,262	16,253
Southern Pacific	Oct.	9,126	17,342,378	2,919,977	22,206,867	2,374,326	3,108,620	452,556	6,695,366	660,300	13,653,629	61.5	8,553,238	6,715,926	5,942,021	5,860,108
	10 mos.	8,927	140,688,487	33,178,541	192,111,347	23,241,807	30,210,152	4,318,787	60,715,518	6,604,167	128,552,301	66.9	63,559,046	47,688,791	42,863,939	38,999,403
So. Pacific Steamship Lines	Oct.	....	956,944	56,792	1,076,597	20,882	381,877	26,756	617,327	31,070	1,077,912	100.1	—1,315	—2,641	—2,276	119,195
	10 mos.	....	7,789,968	569,358	9,366,739	218,220	2,962,664	205,549	5,741,845	345,931	9,474,209	101.1	—107,470	—123,244	—97,712	716,619
Texas & New Orleans	Oct.	4,729	5,893,105	783,731	7,275,545	1,008,754	1,170,728	175,801	2,009,805	261,578	4,639,386	63.8	2,636,159	2,176,935	1,832,803	1,813,414
	10 mos.	4,729	48,906,955	8,659,875	62,693,221	9,605,973	12,037,958	1,781,628	19,780,583	2,607,706	45,913,558	73.2	16,779,663	13,104,202	10,142,596	7,242,001
Spokane, Portland & Seattle	Oct.	554	757,331	67,448	893,927	124,834	117,988	15,045	246,029	24,622	535,339	59.9	358,588	265,475	258,565	309,359
	10 mos.	554	6,379,352	902,901	8,031,406	1,154,437	1,047,273	126,464	2,341,877	240,209	4,968,844	61.9	3,062,562	2,197,738	2,031,850	1,948,104
Tennessee Central	Oct.	296	299,063	11,752	327,997	52,551	47,374	8,297	105,275	13,802	222,633	67.9	105,364	91,434	68,487	35,572
	10 mos.	296	2,511,118	158,803	2,845,273	497,043	430,088	86,736	981,527	133,237	2,108,149	74.1	737,124	649,583	458,382	333,556
Terminal R. R. Assn. of St. L.	Oct.	55	.....	.....	1,129,715	243,053	106,341	2,318	454,484	27,700	837,529	74.1	292,186	185,260	277,410	280,072
	10 mos.	55	.....	.....	10,783,469	1,664,104	873,701	27,039	4,627,954	271,538	7,497,205	69.5	3,286,264	2,242,186	3,130,622	3,261,779
Texas & Pacific	Oct.	1,954	3,434,450	436,178	4,129,681	728,562	667,295	90,836	1,126,392	127,450	2,687,476	65.1	1,442,205	1,293,825	1,150,509	1,403,842
	10 mos.	2,003	31,208,437	4,531,582	38,541,924	6,153,799	6,526,959	918,045	11,796,570	1,240,473	26,605,148	69.0	11,936,776	10,016,748	7,580,773	8,547,425
Texas Mexican	Oct.	162	87,619	3,751	100,781	23,585	20,716	4,475	41,409	7,735	95,636	94.9	5,145	133	—8,994	12,791
	10 mos.	162	1,018,644	35,326	1,174,224	199,422	193,624	41,655	430,690	78,769	934,576	79.6	239,648	189,216	106,880	147,792
Toledo, Peoria & Western	Oct.	239	226,906	403	233,491	45,230	28,432	13,714	68,696	8,322	164,394	70.4	69,097	60,485	47,723	45,111
	10 mos.	239	1,939,079	6,146	2,009,370	278,068	246,468	120,779	651,933	90,525	1,387,773	69.1	621,597	543,489	425,396	247,345
Toledo Terminal	Oct.	28	.....	.....	144,809	7,110	18,519	582	59,723	5,334	90,878	62.7	53,931	37,259	71,677	69,920
	10 mos.	28	.....	.....	1,376,781	110,219	178,291	5,888	566,683	54,721	912,386	66.3	464,395	302,899	526,627	567,814
Trinity & Brazos Valley	Oct.	367	313,272	6,849	331,306	94,771	51,213	6,340	93,802	12,746	256,662	77.5	74,644	66,878	13,841	122,749
	10 mos.	367	2,131,528	67,441	2,298,748	598,023	365,087	56,626	821,657	121,648	1,948,809	84.8	349,939	272,024	—77,484	61,800
Ulster & Delaware	Oct.	128	45,894	3,027	83,354	16,657	16,683	1,272	40,689	4,128	79,429	95.3	3,925	—1,475	—4,676	—806
	10 mos.	128	366,200	216,825	967,354	163,476	157,274	13,902	449,449	41,198	825,299	85.3	142,055	81,851	47,235	82,289
Union R. R. of Penna.	Oct	45	.....	.....	1,013,937	113,503	219,453	162	374,423	14,307	721,719	71.2	292,218	244,718	344,994	433,968
	10 mos.	45	.....	.....	9,628,358	945,285	1,852,899	1,767	3,623,276	143,976	6,565,259	68.2	3,063,099	2,684,672	3,437,365	2,740,078
Union Pacific	Oct.	3,765	12,546,612	1,145,347	14,689,147	1,179,826	2,053,556	179,596	3,466,878	354,844	7,426,588	50.6	7,262,559	6,510,413	5,704,050	5,585,106
	10 mos.	3,765	81,396,739	12,786,043	103,015,290	12,151,446	20,081,316	1,896,445	27,358,355	3,435,465	66,918,552	65.0	36,096,738	28,572,329	25,530,965	25,912,321
Oregon Short Line	Oct.	2,538	4,081,527	262,721	4,642,450	377,123	471,038	59,240	1,124,762	132,661	2,263,330	48.8	2,379,120	1,944,503	1,754,835	1,567,862
	10 mos.	2,538	27,252,642	3,338,743	33,169,652	5,063,874	4,667,855	573,023	9,290,749	1,320,708	21,663,059	65.3	11,506,593	8,201,707	7,222,834	6,753,098
Oregon-Wash. R. R. & Nav.	Oct.	2,364	2,338,791	203,641	2,780,424	323,335	337,807	73,886	948,008	135,508	1,859,057	66.9	921,367	720,146	530,704	766,813
	10 mos.	2,365	19,789,125	2,528,356	24,604,357	4,271,147	3,697,361	791,082	8,951,320	1,342,146	19,317,314	78.5	5,287,043	3,286,837	1,872,552	1,650,847
Los Angeles & Salt Lake	Oct.	1,210	2,008,541	309,821	2,549,585	288,296	341,214	80,338	714,142	87,072	1,594,975	62.6	954,610	754,897	603,352	411,887
	10 mos.	1,209	17,110,389	4,004,183	23,234,712	3,537,604	3,718,997	827,726	6,734,459	864,145	16,566,276	71.3	6,668,436	5,104,711	3,923,178	1,706,016
St. Joseph & Grand Island	Oct.	258	449,837	9,805	469,597	46,207	37,369	3,301	127,824	15,716	230,417	49.1	239,180	204,989	160,352	129,269
	10 mos.	258	3,066,020	106,540	3,355,385	514,579	431,357	33,305	1,099,852	159,513	2,238,606	66.7	1,116,779	903,627	657,727	631,668
Utah	Oct.	111	227,786	.....	227,960	34,248	39,369	432	44,226	5,048	123,323	54.1	104,637	85,806	76,716	51,080
	10 mos.	111	1,623,604	.....	1,627,457	234,871	364,277	3,728	348,548	51,970	1,003,394	61.7	624,063	501,104	444,081	195,383
Virginian	Oct.	545	1,730,391	20,364	1,844,044	177,358	324,213	14,758	344,903	31,738	888,420	48.2	955,624	775,622	861,977	771,844
	10 mos.	545	15,354,562	279,102	16,469,154	1,713,358	2,940,281	141,715	3,247,371	326,039	8,347,185	50.7	8,121,969	6,415,938	7,180,510	5,668,431
Wabash	Oct.	2,523	6,090,217	542,939	7,121,760	888,804	1,156,777	206,040	2,454,054	260,554	4,966,017	69.7	2,155,743	1,891,169	1,580,236	1,595,701
	10 mos.	2,523	54,959,585	5,909,595	65,691,005	9,078,553	11,057,990	1,839,439	23,374,875	2,226,369	47,787,171	72.7	17,903,834	15,035,353	11,819,153	9,346,400
Ann Arbor	Oct.	293	516,070	15,167	549,798	36,910	119,763	14,258	203,058	14,072	385,313	70.1	164,485	136,418	114,805	102,970
	10 mos.	293	4,905,455	162,270	5,302,198	584,574	1,098,171	145,693	1,969,494	126,491	3,892,627	73.4	1,409,571	1,137,272	886,197	748,956
Western Maryland	Oct.	874	1,737,377	20,162	1,825,010	224,869	364,563	44,418	424,343	41,547	1,099,044	60.2	725,966	625,966	704,728	631,408
	10 mos.	874	14,885,959	276,452	15,755,586	2,533,196	3,032,779	427,010	4,115,779	419,193	10,558,756	67.0	5,196,830	4,336,830	4,803,434	4,363,362
Western Pacific	Oct.	1,051	1,809,041	89,494	2,071,369	263,591	280,815	70,322	583,759	52,681	1,347,525	65.1	723,844	610,454	617,884	932,230
	10 mos.	1,051	12,621,744	1,249,942	15,058,609	2,778,459	2,729,285	723,136	5,037,290	501,052	12,181,845	80.9	2,876,764	1,800,840	2,246,057	1,941,573
Wheeling & Lake Erie	Oct.	511	1,785,649	17,337	1,924,091	261,343	450,217	38,659	534,601	42,436	1,326,601	69.0	597,490	457,762	503,317	583,776
	10 mos.	511	17,394,381	213,614	18,774,506	2,257,943	4,341,218	377,890	5,101,121	475,190	12,552,995	66.9	6,221,511	4,780,105	4,762,749	4,203,850
Wichita Falls & Southern	Oct.	203	110,659	1,473	118,328	18,858	11,386	3,307	31,268	3,714	68,533	57.92	49,795	44,320	34,233	52,644
	10 mos.	179	854,581	15,934	930,400	155,215	110,592	27,004	271,487	42,576	606,853	65.22	323,547	268,037	208,663	219,111

News of the Week

(*Continued from page 1395*)

grain elevator and the shops at Reading, the speaker went on to outline plans for the immediate future. More than $10,000,000 represents orders which have been placed for cars and locomotives, and a number of Santa Fe type locomotives are being built at the company's shops in Reading. The Diesel engine is being tried, and the use of gasoline electric passenger cars on branches is increasing.

In substituting motor coaches for unprofitable steam trains, the company has effected annual savings of $270,000, and 271 motor coach schedules are now operated by the Reading Transportation Company.

The company is building the terminal Commerce Building at Broad and Callowhill streets, the largest office-showroom warehouse in the country, at a cost of $4,000,000. At the Port Richmond terminal, $1,000,000 is being spent in rebuilding piers. This terminal now has track room for 8,600 cars and 4,800 river craft take their coal at these docks. Other new buildings being put up are: enlargement of the Front street freight station, $1,000,000; new station at Franklin street, Reading, $800,000; and a new station at Trenton Junction, N. J. The new building recently put up at Reading for the Y. M. C. A. is one of the finest of its kind, and there are 4,588 railroad members there. Of the five large bridges over the Susquehanna River, three have been rebuilt and a fourth will be completed early next year, the latter at a cost of $1,000,000.

The Reading has 830 street crossings protected by watchmen or automatic signals, and has embarked on a program of $11,000,000 for elimination of grade crossings. The experience of the Reading has been that the average cost of eliminating crossings is more than $100,000 each. In Manayunk, Pa., just now, a total of $4,500,000 is being spent in this way. Upwards of $5,700,000 will be spent on crossings and electrification on the Chestnut Hill branch and the Chester branch, and $3,000,000 will have to be spent for the elevation of the Reading tracks over Allegheny avenue, twenty-first and twenty-second streets, Philadelphia. Proposed new work on the road in 1930 will cost $21,500,000 to which sum must be added $10,870,000 for cars and locomotives; total $32,370,000. New stations are being built at many points, and a new bridge over the Raritan river at Bound Brook, N. J., will cost $1,000,000.

Mr. Dice has no fear of the automobile. The expansion of the Metropolitan territories will lead to improved transportation and lower costs, and attract additional patronage.

The Reading's electrification program calls for an expenditure of $20,000,000. From the terminal in Philadelphia to Lansdale, electric operation will probably be begun by July 1, 1931; and then it is proposed to electrify from Jenkintown to Langhorne and from Wayne Junction to Chestnut Hill. It is expected that when this work is done, electrification will be extended to Bound Brook, N. J., and ultimately to New York, also up the Schuylkill Valley to Reading. The total cost of electrification work in view will be $52,000,000.

* * * *

A Corner of the New Pennsylvania Travel Shop at Chicago

The walls of the ticket office, which is furnished with rugs, tapestried chairs and lounges, are covered with mural paintings and panels depicting the spirit of transportation. These panels, some of which portray actual scenes on the Pennsylvania, are painted and carved on composition wall board.

Traffic

Sandwiches, coffee, pie, milk and other foods are now served in the coaches of the Seaboard Air Line on all trains which have dining cars.

The Great Lakes Regional Advisory Board will hold its twenty-sixth regular meeting at Cleveland, Ohio, on December 18. W. L. Ross, president of the New York, Chicago & St. Louis will be the principal speaker.

The ten thousandth carload of California grapes, crop of 1929 arrived at the Manhattan Produce Yard of the Pennsylvania Railroad in New Jersey on November 18; an average of 130 carloads of grapes arriving daily through the season, which began on September 3.

The New York, Westchester & Boston, subsidiary (electric) of the New York, New Haven & Hartford, has been extended from its former eastern terminus, two miles, to Port Chester, N. Y.; and beginning December 8, regular train service was installed between Port Chester and the Harlem River terminus in New York City, 21 miles. A new station has been built at Port Chester.

The Board of Public Utility Commissioners of New Jersey has denied the application of the City of North Wildwood for the opening of seven street crossings over the tracks of the West Jersey & Seashore in that city. The commission has granted the application of the Atlantic City Railroad for authority to discontinue maintaining an agent at Goshen, the road agreeing to have an attendant on duty two hours during the afternoon, on week days, to attend to freight shipments.

The Lehigh Valley's Wilkes-Barre express now has its club car equipped with a combination radio and phonograph. This all-electric Majestic radio set is specially designed with a filtering system which eliminates disturbances due to rapid movement of the train. For some time, railroads in the west and the Canadian National in Canada have been using radio as standard equipment on some of their de luxe trains but only recently has radio engineering made the use of the radio satisfactory in the more crowded areas of the east.

Nine members of the Atlantic States Shippers' Advisory Board have been appointed as a committee to co-operate with the committee of the railroads in the consideration of the freight handling situation in New York, which problem includes the complicated question of pick-up and delivery service. H. E. Stringer, general chairman, in announcing the names of the committee, says that no fault is found or suggested concerning what is being done by other groups representing the public, the assumption being that, as a matter of course, a committee from the advisory board may be able to

give helpful co-operation. The chairman of the committee is G. F. Hichborn, of the United States Rubber Company, and the other members are: W. J. Mathey, American Newspaper Association; T. T. Harkrader, American Tobacco Company; W. H. Brusche, Francis H. Leggett Company; W. S. Nevius, Pittsburgh Plate Glass Company; C. R. MacCarey, Hercules Cement Company; C. L. Hilleary, F. W. Woolworth Company; P. W. Moore, Chamber of Commerce, Borough of Queens; and L. S. Meyer, Hydraulic-Press Brick Company.

Guests of T. A. T.

W. H. Webb, L. S. Wetzel, E. T. Gaston and J. H. Conley, passenger conductors on the Philadelphia division of the Pennsylvania, have been taking flights to the Pacific coast, on the planes of the Transcontinental Air Transport, this for the purpose of qualifying them to give suitable information to passengers on their trains. Other trainmen of the Pennsylvania are making similar trips.

Fined for Misbilling

The Detroit, Toledo & Ironton was fined $25,000 by Federal Judge Benson W. Hough at Columbus, Ohio, on December 3, when it pleaded guilty to a Federal indictment charging false billing of shipments of coal. The railroad was fined $1,000 on each of 25 counts in the indictment which was reported by the Federal Grand Jury following an investigation last spring.

Robbery Losses Reduced

Losses due to robbery of freight while in transit for the first six months this year were the lowest on record, the Freight Claim Division of the American Railway Association announces. The total was $410,103, a decrease of $127,157 or 24 per cent compared with the corresponding period in 1928, and a decrease of approximately six million dollars below the first half of 1920, when losses from that cause were the greatest in the history of the railroads.

New York Shippers Seek Store-Door Trial

The Shippers' Conference of Greater New York on December 11 voted to petition the railroads serving that city to provide, experimentally, store-door collection and delivery of carload freight on Manhattan Island south of Fifty-ninth street. The plan would provide for the handling of l.c.l. freight through so-called "inland" stations, i. e., stations served by motor truck rather than by direct rail lines or car floats. The bulk of freight in New York, except that of the New York Central which has direct rail connections, is now handled by car float and lighters through freight stations located in piers along the water front.

The system proposed by the shippers would substitute for such handling the use of motor trucks to convey freight between rail terminals in New Jersey and business houses in New York. A cartage charge would be added to the regular freight rate to compensate for the added service to patrons. If the experiment in the area mentioned were successful, the plan then could be extended to the entire metropolitan area and the use of pier freight stations could be abandoned. Some difference of opinion arose among the shippers regarding the area in which the experiment should be tried, it being maintained by some that the zone of experiment should be larger.

Burlington Improves Passenger Service

The Chicago, Burlington & Quincy, effective December 20, 21 and 22, will add passenger service to one of its mail-express trains between Chicago and Omaha, Neb., and will re-equip three of its trains now operating between Chicago and the Twin Cities, Chicago and Omaha, and Chicago and Denver, Colo. Its mail and express train, No. 25, will include passenger service, leaving Chicago at 10.30 p. m. and arriving at Omaha at 10.55 a. m. and at Lincoln at 12.30 p. m. Returning at No. 30, it will leave Lincoln at 4.50 p. m. and Omaha at 6.15 p. m. and will arrive at Chicago at 7.10 a. m.

The new equipment of the trains will include a salon car, a lounge car, bedroom cars with compartments which can be converted into suites, a radio room and a sun parlor. One of these trains is the Chicago-Nebraska Limited, between Chicago and Omaha and Lincoln and the Nebraska-Chicago Limited, returning which will be known as the Ak-Sar-Ben (Nebraska spelled backwards). The westbound schedule will remain unchanged, while eastbound the Ak-Sar-Ben will leave Lincoln at 7 p. m. instead of 4.50 p. m. and Omaha at 8.30 p. m. instead of 6.30 p. m. and will arrive in Chicago at 8.45 a. m. instead of 7.50 a. m. The Colorado Limited between Chicago and Denver and the Chicago Limited eastbound will be renamed the Aristocrat which will operate on the same schedule. The third train to be re-equipped, but without change of schedule or name, is the Black Hawk between Chicago and the Twin Cities.

I. C. C. Extra Fare Investigation

The Interstate Commerce Commission, in assigning its investigation of extra fares on passenger trains for hearing at Chicago on February 17, has announced its intention of dealing comprehensively with the practice of charging extra fares and its desire that the record, when complete, shall include the following information:

(1) Upon what basis are extra fares arrived at?

(2) In what manner does the service rendered on extra-fare trains differ from that on trains on which no extra fares are charged?

(3) Statement showing the number of trains, between all points, upon which extra fares are charged; dates upon which such extra fares were first instituted; amount of such extra fares; number of trains between the same points upon which no extra fares are charged, and amount of such non-extra fares; such statement to include distance, and schedule time of departure and arrival.

(4) Revenue derived from extra fares for 1912, 1919, 1926, 1927 and 1928.

(5) Does prejudice or discrimination result by reason of the operation of extra-fare trains?

(6) Cost of operating extra-fare trains compared with cost of operating trains upon which no extra fares are charged.

These items are not to be considered all-inclusive, nor to preclude the introduction of other testimony.

The investigation was instituted in connection with a number of fourth-section applications filed by eastern carriers seeking authority to maintain extra fares on fast trains without observing the aggregate-of-intermediates provision of the fourth section of the interstate commerce act. The hearing will be before Examiners Worthington and Boat and dates and places of hearings at other points, if necessary, will be announced later. The filing of separate complaints or petitions of intervention is not necessary as all interested parties who desire will be heard.

Reduced Fares in Reading Suburban Zone

The Reading has adopted (beginning December 9) a tariff of reduced passenger fares from points near Philadelphia to that city and return which are from 25 to 50 per cent less than the regular rates, the experiment being intended to continue for a period of six months. Typical examples of the reductions are given as follows:

				New 20-trip Family Tkt.	
	Miles	Present Round-trip	New one-day Round-trip	Price	Giving round-trip fare of
Germantown	6.3	$0.52	$0.30	$2.80	$0.28
Jenkintown	10.8	.80	.45	4.00	0.40
Bethayres	15.1	1.12	.65	5.60	0.56
Conshohocken	13.5	1.00	.55	5.00	0.50

The new tickets are to be sold at the suburban stations but are not to be good for a round-trip beginning at Philadelphia. These one-day tickets average a reduction of 45 per cent under present round-trip fares, and they are also more than 25 per cent below the rate obtainable by using ten-trip tickets. The 20-trip family tickets make a still further reduction. It is hoped that these rates will act as a stimulus to attract home builders. A successful experiment of this kind, attracting automobile owners to the railroad, should result in relief to the congestion of city streets.

S. E. Board Predicts Traffic Increase

The Southeastern Shippers' Advisory Board held its twenty-eighth regular meeting in New Orleans, La., on December 6. Of the 23 commodity reports, nearly all predicted an increase of business during the first quarter of 1930. The general stock-market disturbance has had some depressing effect but the general economic conditions in the southeast are reported as encouraging. Among the de-

creases expected are: lumber and forest products (at present 15 per cent less than in 1928) probably will pick up materially after January 1. In crushed stone, gravel, etc., a decrease of 15 per cent is expected, and decreases are expected in iron, cotton (10 per cent) apples, potatoes and fresh vegetables.

Citrus fruits from Florida will probably be 12 per cent heavier; the movement of brick is expected to increase by five per cent, and of cement, 20 per cent. The prediction concerning farm machinery is 10 per cent increase and naval stores 15 per cent. Various other industries, lumped together, show an expectation of five per cent increase.

Thomas J. Burke, commissioner of the Charleston (S. C.) Traffic Bureau, was elected general chairman; E. T. Wood, Chattanooga, Tenn., vice chairman; and A. J. Young, Atlanta, Ga., general secretary.

Freight Traffic in October

Freight traffic handled by Class 1 railroads in the first ten months of 1929 amounted to 417,405,373,000 net ton-miles, the heaviest traffic for any corresponding period on record, according to reports compiled by the Bureau of Railway Economics. This was an increase of 19,861,799,000 net ton-miles or 5 per cent above the same period last year and an increase of 14,552,635,000 net ton-miles or 3.6 per cent, above the same ten months period in 1927.

Railroads in the Eastern district for the ten months reported an increase of 7.3 per cent in freight traffic handled, compared with the same period in 1928, while the Southern district reported an increase of 1.1 per cent. The Western district reported an increase of 3.3 per cent.

Freight traffic in October amounted to 47,813,993,000 net ton-miles, a reduction of 419,761,000 net ton-miles or nine-tenths of one per cent under that of the same month last year. It was, however, an increase of 2,277,442,000 net ton-miles or 5 per cent above that for October, 1927. In the Eastern district, there was an increase of one per cent in October, 1929, compared with the same month in 1928, while the Southern district reported a decrease of 1.5 per cent. The Western district reported a reduction of three per cent.

The average movement per car per day for October was 36.3 miles, which average has never before been attained in any month. This was an increase of one-tenth of a mile above the best previous average established in October last year. It also was 1.6 miles above that for October, 1927, and two miles above that for October, 1926.

The average speed of freight trains in October was 13 miles per hour, the highest average for any October on record and an increase of four-tenths of a mile above that for October last year.

The average load per car in October was 26.9 tons, including less than carload freight as well as carload freight. This was a reduction of one-tenth of a ton below that for October, 1928, but four-tenths of a ton above for October, 1927.

Foreign Railways

Second Trans-Andine Railway Projected

According to recent newspaper announcements, plans for a second trans-Andine rail link between Chile and Argentina are rapidly assuming definite shape. The proposed new route will make use of existing lines of the Great Southern Railway from Buenos Ayres to Zapala, Argentina, a distance of 973 miles, and of the Chilean Government Railways from Santiago to Temuco, 430 miles. To connect Zapala and Temuco about 150 miles of new construction will be necessary, including a tunnel of 2.97 miles. The estimated cost of this bore, which would be the longest in South America, is about $2,000,000.

The new line would be some 600 miles longer than the present trans-Andine railway from Buenos Ayres to Santiago via Mendoza, Argentina, and Los Andes, Chile, but would have the decided advantage of being standard gage throughout, whereas the existing line involves several changes of gage.

German Railways to Exchange Currency

With the object of further encouraging tourist traffic in Germany, the German National Railroad Company (Deutsche Reichsbahn Gesellschaft) has taken over the entire business of exchanging currencies at the various railway stations, according to reports from the Department of Commerce. By January 1, 1930, all private exchange bureaus at stations will have been replaced by branches of the German Traffic Credit Bank, a subsidiary of the railroad company.

The new arrangement not only assures uniform rates of exchange throughout the country, but also makes possible more favorable rates for the traveler than can usually be granted by private concessionaires. The importance of the plan, as a stimulant to tourist travel, is evident from the fact that in the last operating year (1928) over $10,800,000, or approximately 3.2 per cent of the railroad company's total passenger revenues, came from foreigners traveling in Germany.

United Railways of Havana Annual Report

Gross revenues equivalent to $18,515,740, operating expenses of $14,293,450 and net revenue of $4,222,290 were reported by the United Railways of Havana for the year ending June 30, 1929, according to a report of the annual meeting recently published in the Times (London). This revenue figure represents an increase of $790,123 over that of the previous year, and coupled with a decrease in expenses, brought the net revenue $1,003,220 over that reported for 1927-28.

The report points out that the earnings of the company were adversely affected by the low price of sugar, which, during the year under review, remained almost uniformly at less than 2½ cents per pound. The rates charged by the United Railways for carrying sugar are based on a sliding scale so that when sugar falls below 5 cents per pound the rates decrease and continue to do so until at 2½ cents the minimum rate is reached. During 1928-29 this minimum operated for 50 of the 52 weeks and thus depressed the revenue despite the fact that 21 per cent more sugar cane and sugar products were carried than in the year 1927-28. Since this sugar traffic, the report continues, accounts for approximately 72 per cent of the gross tonnage handled, the price of sugar and the prosperity of that main industry of Cuba is of paramount importance to the United Railways.

A second factor which was said to have adversely affected the railway earnings is the competition from highway operators, manifest in the decline of passenger earnings. The report continues to say that efforts to meet the competition of highway carriers for freight traffic have met with some success.

Out of the balance of the net revenue account which amounted to £258,997, £50,000 was transferred to a depreciation reserve and a dividend of 2½ per cent, less income tax, on the 5 per cent cumulative preference stock was paid, leaving a balance equivalent to $585,000 to be carried to surplus.

* * *

The Boston & Maine's "Pine Tree Limited" Leaving Portsmouth, N. H.

Equipment and Supplies

Locomotives

THE CHICAGO GREAT WESTERN is inquiring for 15 locomotives of the 2-10-4 type.

THE BESSEMER & LAKE ERIE is inquiring for nine locomotives of the 2-10-4 type.

THE BELT RAILWAY OF CHICAGO has ordered five 0-8-0 type locomotives from the Baldwin Locomotive Works.

THE AMERICAN BRIDGE COMPANY has ordered one switching locomotive from the Baldwin Locomotive Works.

THE ATCHISON, TOPEKA & SANTA FE has ordered one locomotive of the 2-10-4 type from the Baldwin Locomotive Works.

THE CHICAGO, BURLINGTON & QUINCY has ordered 12 of the 4-6-4 type and eight of the 4-8-4 type locomotives from the Baldwin Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of October 19.

THE LOUISVILLE & NASHVILLE has authorized the purchase of the following equipment to be ordered in 1930:

6	Passenger Locomotives
500	D. B. Gondola Cars
300	Hopper Cars
500	S. S. Box Cars
250	Flat Cars
250	L. S. Gondola Cars
3	Dining Cars
4	Combination Coach and Baggage Cars
4	M. S. Coaches
2	Baggage and Mail Cars
10	Straight Baggage Cars

Freight Cars

LOUISVILLE & NASHVILLE.—See item under locomotives.

THE MISSOURI-KANSAS-TEXAS plans to construct 500 coal cars in its own shops at Denison, Tex.

THE JAMAICA GOVERNMENT RAILWAY is inquiring for 40 box cars of 20 tons' capacity. P. M. McKay is locomotive car and wagon superintendent at Kingston, Jamaica.

THE CHICAGO, ROCK ISLAND & PACIFIC has placed orders for 5,000 freight cars as follows:

No.	Type		Builder
1,000	Gondola	70 tons	Pressed Steel Car Co.
1,000	Box	.....	Am. Car & Fdy. Co.
500	Box	.....	Gen. American Car Co.
500	Box	.....	Pullman Car & Mfg. Corp.
500	Auto	50 ft. 6 in.	Standard Steel Car Co.
1,000	Auto	40 ft.	Bettendorf Company
250	Flat	.....	Ryan Car Company
250	Stock	.....	Ryan Car Company

Inquiry for this equipment was reported in the *Railway Age* of November 21.

THE CANADIAN NATIONAL has ordered 2,250 box cars from the Canadian Car & Foundry Company, 1,175 from the National Steel Car Corporation and 1,000 from the Eastern Car Company. Inquiry for 3,000 cars was reported in the *Railway Age* of December 7.

THE MISSOURI PACIFIC has ordered 625 box and 35 caboose cars from the American Car & Foundry Company and 625 box cars from the Mount Vernon Car Manufacturing Company. Inquiry for this equipment was reported in the *Railway Age* of November 9.

Passenger Cars

LOUISVILLE & NASHVILLE.—See item under locomotives.

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for 10 coaches, 74 ft. 6 in. long.

THE ST. LOUIS-SAN FRANCISCO has ordered three dining cars from the Pullman Car and Manufacturing Corporation.

THE NORTHERN PACIFIC has ordered nine dining cars from the Pullman Car & Manufacturing Corporation.

THE CHICAGO, BURLINGTON & QUINCY is inquiring for 10 gas-electric rail motor cars.

THE WABASH has ordered three baggage and mail cars from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of November 2.

THE SOUTHERN is inquiring for 13 steel mail and baggage cars with 30-ft. mail compartment, 9 steel mail and baggage cars with 15-ft. mail compartment and one steel postal car, all to be 60 ft. long.

Signaling

THE TEXAS & PACIFIC has contracted with the General Railway Signal Company for the installation of automatic block signals at Fordoche, La., five color-light signals, type D.

THE PENNSYLVANIA has ordered from the Union Switch & Signal Company material for an electro-pneumatic interlocking 75 lever machine with position light signals, switch movements, etc., for D.O. Tower, Trenton, N. J.

THE MISSOURI PACIFIC has ordered from the General Railway Signal Company, a dispatching machine for the control of ten signals, two crossovers at Pacific, Mo., and two at H D Junction. With this machine, the operator will control movements on the double track between the points named, 11½ miles. The existing intermediate automatic block signals already provide for movements in either direction on either track.

Supply Trade

The Washington, D. C. office of the **Bradford Corporation,** which is in charge of **H. F. Lowman,** vice-president, will be moved on December 16, from the Munsey building to 910 Investment building, Fifteenth and K streets, Northwest.

O. P. Chamberlain, vice-president of the **Dolese and Shepard Company,** Chicago, and formerly president and general manager of the Chicago & Illinois Western, has been elected president of the Dolese and Shepard Company to succeed **J. F. Talbot,** president and treasurer. **Wm. Roy Carney** succeeds Mr. Chamberlain, while **Edward R. Hills** has been made secretary and **Wm. J. Stoffel,** treasurer.

The **Harry W. Leighton Company,** Chicago, has been organized by **Harry W. Leighton** to act as a manufacturers railroad and industrial representative in the Chicago territory. Mr. Leighton, who has represented various companies in Illinois, Indiana, Michigan, Wisconsin and Iowa for the past 15 years, is president of the new campany, while **W. E. Thurber,** who has been manufacturers representative for the Colonial Tool Steel Company is vice-president and secretary.

F. A. Whitehead, superintendent of rolling mills has been promoted to the new position of general superintendent at the mills of the **Copperweld Steel Company,** Glassport, Pa. **S. L. Gibason,** assistant superintendent of rolling mills has been appointed superintendent of rolling mills and **J. C. Glover** has been appointed assistant superintendent of rolling mills.

Gordon Gordon of New York has been elected president and treasurer of the **Taft-Peirce Manufacturing Company,** Woonsocket, R. I., to succeed **Louis V. Hubbard** deceased. Mr. Gordon has been secretary of the company for the past 25 years. **Frederick S. Blackall, Jr.,** continues as vice-president and general manager in charge of the plant and was elected also secretary to succeed Mr. Gordon. **John W. Wheeler, Jr.,** Bridgeport, Conn. was elected a member of the board of directors.

Trade Publication

STEEL AND WROUGHT IRON PIPING. — Design Standards for Ox-Welded Steel and Wrought Iron Piping is the title of a 68-page booklet issued by the Linde Air Products Company, New York City. This booklet, which should prove of special interest to designing engineers and architects, is intended to be of assistance in the designing of gas-welded steel or wrought iron piping systems, and covers all of the necessary structural details in connection with such work.

Construction

ATCHISON, TOPEKA & SANTA FE.—A contract has been let to List & Clark, Kansas City, Mo., for the construction of 2.5 miles of new line near Tecumseh, Kan., as part of a grade revision project in the vicinity of Topeka, Kan. The contract involves the excavation of 90,000 cu. yd. of material and the construction of two reinforced concrete bridges and a highway subway.

ATCHISON, TOPEKA & SANTA FE.—The Interstate Commerce Commission has authorized the South Plains & Santa Fe, a subsidiary of this company, to construct a line from Seagraves, Tex., westerly approximately 46 miles to Lovington, N. M. An application for authority to build a branch line from a point 5 miles west of the Texas-New Mexico state line running southward 43.5 miles, has been denied. The estimated cost of construction, including the branch line which was not authorized, is $2,711,850.

CANADIAN NATIONAL.—Plans have been prepared for the construction of a connection about two miles long with the grain elevator of the Canada Steamship Company at Kingston, Ont. Including grading, ditching, construction of culverts, fencing, track laying and ballasting the line will involve an expenditure of about $100,000.

CANADIAN NATIONAL.—A contract for the cleaning of the right of way, grading and installation of culverts for the construction of an extension of the Uelfort-Ridgedale branch from Ridgedale to a point 30 miles north has been awarded to Stewart & Cameron, Ltd., Winnipeg, Man. The cost of the line is estimated at $1,100,000.

CANADIAN NATIONAL.—This company plans the construction of a hotel of the "Chateau" type, similar to the Château Laurier at Ottawa, Ont., at Saskatoon, Sask., at a cost of about $2,000,000. It is expected that the first bill to be presented to the Saskatchewan legislature at its next session will be one embodying an agreement between the railroad and the City of Saskatoon for this construction.

CHESAPEAKE & OHIO.—This company has authorized the replacement of steel span bridge No. 200 over Willey road, Fernald, Ohio, with a through plate girder span on concrete abutments at a probable cost of $31,500.

CHESAPEAKE & OHIO.—This company has let to Board & Board, of Charleston, W. Va., a contract for the extension of its Gauley and Rich Creek line a distance of approximately 5.5 miles from Marshall, W. Va. The estimated cost of the extension is $400,500. It was reported in the *Railway Age* of November 30 that construction of the new line had been authorized by the Interstate Commerce Commission. A contract has also been awarded to the Carpenter-Major Brothers Company, Clifton Forge, Va., for the rearrangement and construction of additions to present facilities at Big Island, Va., at a probable cost of $32,000.

CHICAGO & NORTH WESTERN.—A contract for the construction of a reinforced concrete highway subway under the tracks of this company on state highway Number 19 near Crystal Lake, Ill., has been let to the Koss Construction Company, Des Moines, Iowa. The total cost of the structure, which will be apportioned between the state and the railway, will be about $55,000.

ERIE.—The Public Service Commission of New York has directed the elimination of the Broadway crossing of the Erie, in Alden, N. Y. Plans contemplate carrying the street under the grade of the railroad tracks.

LEHIGH VALLEY.—The New York Public Service Commission has approved as not excessive the low bid of $52,951, submitted by H. W. Golden & Son, Inc., Troy, N. Y., for the elimination of the Waverly-Owego crossing in Waverly, N. Y., and has further directed the railroad to award necessary contracts and to begin work. The commission has also approved plans for the installation of automatic warning signals at two grade crossings on North Division street and at crossings on Wall street, Frazee street, York street, State street, Aurelius avenue and Perrina avenue in Auburn, N. Y., and at the West Cayuga street crossing in Moravia, N. Y.

LONG ISLAND.—The low bid of $87,592 submitted by the Wilson & English Construction Company of New York for the elimination of the South Country road crossing in Islip, N. Y., has been accepted as not excessive by the Public Service Commission of New York. The railroad has been directed to award the contract.

LOS ANGELES & SALT LAKE.—A contract for the construction of a one and two-story brick and steel freight house unit, with outside dimensions of 70 ft. by 558 ft., at Los Angeles, Cal., has been let to the Lynch Construction Company, Los Angeles. The cost of the structure will be about $288,000.

MISSOURI PACIFIC.—This company contemplates the construction of a locomotive terminal and shops near Topping and Nicholson avenues, Kansas City, Mo., during 1930, at an approximate cost of $750,000.

NEW YORK CENTRAL.—The Public Service Commission of New York has ordered the elimination of the State and Ballentine crossings of this company's tracks in Forestport, by closing the existing crossings and constructing a new grade crossing midway between them. The Commission has also directed the elimination of the Carman crossing near Schenectady by building an overhead highway crossing west of the present grade crossing and has approved plans for the removal of Hardin's crossing of the New York Central and the Fonda, Johnstown & Gloversville in Glenville, N. Y., at an estimated cost of $187,200, exclusive of land and damages. Plans have been approved for the installation of automatic warning signals at the following New York Central grade crossings: Cranston's Dock, Highland Falls, N. Y.; Fort Montgomery road, Fort Montgomery, N. Y.; Town line, Mortimer, N. Y.; Mohawk and Franklin streets, Fultonville, N. Y., and Elmwood avenue, Brighton, N. Y.

NEW YORK CENTRAL.—This company has recently awarded contracts as follows: To the Walsh Construction Company, Syracuse, N. Y., for the extension of culverts at bridge No. 157 near Beacon, N. Y.; to the same company for the elimination of a county highway grade crossing just west of Great Bend, N. Y.; to the Pittsburgh-Des Moines Steel Company, New York City, for the manufacture, delivery and erection of a water treating plant at Churchville, N. Y.; to the Deline Construction Company, Watertown, N. Y., for the elimination of Kennies Crossing, Evans Mills, N. Y., at an approximate cost of $115,000; to the Shepard-Niles Crane & Hoist Corporation, New York, for the manufacture, delivery and erection of one 10-ton electric traveling crane at Harmon, N. Y., and to the Bates & Rogers Construction Company, New York City, for the elimination of the Nyack turnpike grade crossing in West Nyack, N. Y., at an estimated cost of $108,184.

NORTHERN PACIFIC.—A contract has been awarded to the E. G. Evansta Company, Minneapolis, Minn., for the extension of a portion of the roundhouse at Mandan, N. D., to provide 140 ft. stalls. The cost of these additions will be approximately $70,000.

OKLAHOMA SOUTHWESTERN.—An application for authority to acquire this railway, the Oklahoma Union and the Fort Smith & Western and, using these lines for a portion of the distance, construct a railroad from McDonald county in the southwest corner of Missouri to Waurika, Okla., has been filed with the Oklahoma Corporation Commission by Charles Briggs of Tulsa, Okla. The new line would connect with the Kansas City Southern in McDonald county.

READING.—A contract for the construction of an electric cinder handling plant at Pottstown, Pa., has been awarded to the Roberts and Schaefer Company, Chicago.

ST. LOUIS-SAN FRANCISCO.—The budget of this company includes the appropriation of $500,000 for the elimination of 22 grade crossings on its lines during 1930.

SOUTHERN.—A contract for the construction of a street subway under the tracks of this company at Third street and Eastern parkway, Louisville, Ky., has been awarded to the L. B. Fugitt Construction Company, Chicago, at a cost of $40,000.

TEXAS & PACIFIC.—The Interstate Commerce Commission has authorized the Texas-New Mexico, a wholly-owned but separately operated subsidiary of the Texas & Pacific, to construct an extension to its line from its terminus on the Texas-New Mexico state line northwesterly to Lovington, N. M., 70 miles; estimated cost, $1,825,000.

TEXAS & PACIFIC.—This company closes bids on December 23 for the construction of a 23 stall enginehouse and other terminal facilities at Big Spring, Tex.

New York Central Manhattan Relocation Approved

The Interstate Commerce Commission has issued a certificate authorizing the New York Central to abandon its line between West Sixtieth street and North Moore street and to construct and operate a line in another location without grade crossings between West Sixtieth street and Spring street, 4.5 miles, in the borough of Manhattan, N. Y., as part of a plan of grade crossing elimination and other improvements which involves an estimated expenditure of $120,872,800 by the railroad and $17,864,700 by the state and city of New York. South of Sixtieth street the estimated expenditure by the company, exclusive of electric power facilities and locomotives, is $69,450,893. Of the total amount $23,073,030 is applicable to new facilities for furnishing electric power and for the purchase of 30 or 35 Diesel locomotives. Commissioner Eastman, in a concurring opinion, says that the proposed expenditure upon less than five miles of line, largely, apparently, for the relief of street traffic congestion in the city, would build a new railroad line between New York and Chicago at an average cost of $133,000 per mile. He suggests that a better way of accomplishing the project would be for the city to construct and own the new line and lease it to the railroad at a rental which would take into consideration the comparative benefits to be derived by the city and the railroad, assessing the betterments upon the adjoining property immediately benefited. Some such plan, it would seem to him, "would protect the users of the railroad against an unjust burden, distribute the burden where it equitably belongs, and prevent the reaping by a few of large and unearned profits."

PRESIDENT HOOVER has nominated E. P. Morrow for reappointment as a member of the Board of Mediation for a five-year term beginning January 1, 1930.

Railway Finance

ALABAMA GREAT SOUTHERN.—*Bonds.*—The Interstate Commerce Commission has authorized this company to procure the authentication and delivery of $500,000 of first consolidated mortgage 5 per cent bonds, Series A.

BOSTON & MAINE.—*Common Dividends Anticipated.*—This company has announced that dividends to common stockholders which have not been paid since April 1, 1913, are "in sight."

The board of directors has given consideration to resumption of common dividends in the light of the estimated earnings for 1929; but decided in the interest of completing the program of modernization of the Boston & Maine to postpone further consideration until early in 1930. Earnings available to the common stock this year will amount to about $8 a share, notwithstanding extraordinary charges in connection with the program of modernization for new construction projects and retirement of obsolescent equipment which would aggregate about $4,000,000, or $10 per share on the common stock. In its recent recovery, the road has been able to pay regularly dividends of 7 per cent on its prior preference stock, and was able to resume payments in full on its several classes of first preferred shares, and as of January 1, 1929, resumed payment of dividends on its ordinary preferred share. The last dividend paid on common was on April 1, 1913, when a quarterly dividend of $1 per share was declared on stock of record March 1, 1913. This was at the rate of four per cent.

CAROLINA, CLINCHFIELD & OHIO.—*Final Valuation.*—The Interstate Commerce Commission has issued its final valuation report as of 1917, finding the final value for rate-making purposes of the properties owned and used for common-carrier purposes to be $37,233,000 for the C. C. & O., $424,000 for the Clinchfield Northern of Kentucky, and $1,649,141 for the C. C. & O. of South Carolina.

CHICAGO & NORTH WESTERN.—*Bonds.*—Kuhn, Loeb & Co., and the National City Company are offering $72,335,000 of this company's twenty-year 4¾ per cent convertible bonds, series A, at 100.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to nominally issue $539,000 of first and general mortgage 6 per cent bonds, to be pledged as security for short term notes.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—ST. PAUL & KANSAS CITY SHORT LINE.—*Trackage Agreement.*—These companies have applied to the Interstate Commerce Commission for authority for an arrangement by which each proposes to operate over the other's tracks between Polo and Birmingham, Mo., to obtain the advantage of paired-track operation and better grades. The Milwaukee proposes to operate over the track of the Short Line (a subsidiary of the Rock Island) from Polo to Birmingham, 36.5 miles, to abandon its own line from a point near Polo to Lawson, Mo., 7.6 miles, and to construct a line from Moseby to Birmingham, Mo., 15 miles. The Short Line proposes to operate over the line of the Milwaukee between Polo and Birmingham, 37.5 miles.

CLEVELAND UNION TERMINALS COMPANY.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue and sell, at not less than 92, $18,000,000 of first mortgage 4½ per cent sinking fund bonds, the remainder of an authorized issue of $50,000,000, the proceeds to be used in financing the construction of the passenger terminal at Cleveland. The application states that whereas the cost of the terminal was originally estimated at $60,565,818, it has been found that the total cost of completion will be about $28,000,000 additional. The bonds are to be guaranteed by the New York Central, the Cleveland, Cincinnati, Chicago & St. Louis and the New York, Chicago & St. Louis.

DELAWARE & NORTHERN.—*New Company.*—The Interstate Commerce Commission has authorized the Delaware & Northern Railway Company to acquire and operate the railroad properties formerly owned and operated by the Delaware & Northern Railroad Company.

DENVER & RIO GRANDE WESTERN.—*Bonds.*—The Interstate Commerce Commission has authorized the Rio Grande Junction to issue $718,000 of refunding mortgage 50-year bonds, Series A, to be delivered to the Denver & Rio Grande Western to reimburse it for expenditures for additions and betterments.

ERIE.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to pledge from time to time $12,000,000 of first consolidated mortgage general lien bonds as security for for short-term notes.

GULF, MOBILE & NORTHERN.—*Bonds.*—The Interstate Commerce Commission has authorized this company to procure the authentication and delivery of $3,500,000 of first mortgage bonds, series C, to reimburse its treasury for capital expenditures.

NEW YORK CENTRAL.—*Assumption of Liability for Securities.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability as lessee in respect of securities of the Cleveland, Cincinnati, Chicago & St. Louis, the Michigan Central and the Chicago, Kalamazoo & Saginaw and of the securities of certain other companies,

the properties of which are either leased, or are proposed to be leased, by either the C. C. C. & St. L., or the Michigan Central. The C. C. C. & St. L., has been authorized to assume obligation and liability as lessee in respect of the securities of the Cincinnati Northern and the Evansville, Indiana & Terre Haute. This authority is a step in the New York Central unification plan, authorized by the Interstate Commerce Commission under the terms of certain proposed leases—a condition being that the New York Central comply with the provisions of the law with reference to the assumption of obligation and liability in respect to the securities of the lessor companies. The New York Central Securities Corporation intervened in this case, contending that Ohio law required rentals for leased lines to at least equal net earnings for the year prior to the making of the lease, but the commission held that it was authorized to act under section 20A of the Interstate Commerce act.

SOUTHERN.—*Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect of $3,690,000 of its equipment trust certificates, series CC. The certificates will receive dividends of 4½ per cent and will mature in installments from 1930 to 1944. The issue will be sold by competitive bidding at a price not less than 95.517, which will make the average annual cost to the railroad not more than 5.25 per cent.

Average Prices of Stocks and of Bonds

	Dec. 10	Last week	Last year
Average price of 20 representative railway stocks.	133.33	129.78	125.51
Average price of 20 representative railway bonds..	93.10	92.70	93.22

Dividends Declared

Atchison, Topeka & Santa Fe.—Preferred, 2½ per cent, payable February 1 to holders of record December 27.

Beech Creek.—$.50, quarterly, payable January 2 to holders of record December 16.

Boston & Maine.—7 Per cent Prior Preferred, $1.75, quarterly; First Preferred A, $1.25, quarterly; First Preferred B, $2.00, quarterly; First Preferred C, $1.75, quarterly; First Preferred D, $2.50, quarterly; First Preferred E, $1.25, quarterly; 6 Per cent Preferred, $1.50, quarterly; all payable January 1 to holders of record December 13.

Erie.—First and Second Preferred, 2 per cent, payable December 31 to holders of record December 16.

Great Northern.—Preferred, $2.50, semi-annually, payable February 1 to holders of record December 27.

Gulf, Mobile & Northern.—Preferred, 1½ per cent, quarterly, payable January 2 to holders of record December 20.

Lehigh Valley.—Common, $.87½, quarterly; Common Extra, $1.00; Preferred, $1.25, quarterly; all payable January 2 to holders of record December 14.

New York & Harlem.—Common and Preferred, $2.50, payable January 2 to holders of record December 16.

Old Colony.—1¾ per cent, quarterly, payable January 2 to holders of record December 14.

Pittsburgh, McKeesport & Youghiogheny.—$1.50, quarterly, payable January 2 to holders of record December 16.

Reading Company.—Second Preferred, $.50, quarterly, payable January 9 to holders of record December 19.

Texas & Pacific.—Common, 1¼ per cent, quarterly, payable January 2 to holders of record December 14; Preferred, 1¼ per cent, quarterly, payable December 31, to holders of record December 14.

Virginian.—Common, $8.00, annually, payable December 31 to holders of record December 16.

Railway Officers

Executive

Kirby M. Post, superintendent of the St. Louis Southwestern lines in Texas, with headquarters at Tyler, Tex., has been promoted to assistant to the president, with headquarters at St. Louis, Mo.

The jurisdiction of **A. C. Mann,** vice-president in charge of purchases and stores of the Illinois Central, has been extended to include the testing department. This department, which is in charge of **J. L. Carver,** engineer of tests, with headquarters at Burnside Shops, Chicago, was formerly under the jurisdiction of the mechanical department.

Following the acquisition of the Blytheville, Leachville & Arkansas Southern by the St. Louis Southwestern, **Daniel Upthegrove,** president of the Cotton Belt, and **F. W. Green,** vice-president, have been elected to similar positions on the subsidiary. **Charlton Messick,** treasurer and assistant secretary of the St. L. S.W., has been appointed secretary-treasurer of the B., L. & A. S., while **H. T. Culp** has been appointed assistant secretary.

B. F. Johnston, president of the Mexican Pacific, has also been elected president of the Kansas City, Mexico & Orient, with headquarters at Los Mochis, Sin. **L. R. Hoard,** vice-president and general manager of the Mexico North Western, has also been elected to the same position on the Orient, with headquarters at Cuidad Juarez, Chih., and El Paso, Tex. **H. F. Jones,** vice-president of the Mexican Pacific, and **C. M. Newman** have been elected vice-presidents, with headquarters at Los Mochis and El Paso, respectively.

Operating

L. L. Lowe, roadmaster on the Missouri Pacific at Batesville, Ark., has been appointed superintendent of the New Orleans & Lower Coast, with headquarters at Algiers, La.

John M. Umshler, trainmaster of the Little Rock, (Ark.) terminal of the Missouri Pacific, has been appointed superintendent of the Peoria & Pekin & Union, with headquarters at Peoria, Ill.

C. C. Cunningham, division engineer of the Kansas division of the Chicago, Rock Island & Pacific, has been appointed trainmaster on that division with headquarters as before at Herington, Kan.

H. S. Phillips, superintendent of personnel and safety of the St. Louis Southwestern, with headquarters at Tyler, Tex., has been appointed superintendent of the lines in Texas, with headquarters at the same point.

O. H. Hagen, general foreman of the steel car plant of the Chicago, Burlington & Quincy at Galesburg, Ill., has been appointed superintendent of the steel car plant at that point.

J. M. Sommers has resumed his duties as trainmaster of the Chicago division of the Grand Trunk, with jurisdiction over the South Bend subdivision and Nichols yard and with headquarters at Battle Creek, Mich., following a leave of absence.

S. A. Brentnall, fire, scales and sanitary inspector of the Oregon-Washington Railroad & Navigation Company, with headquarters at Portland, Ore., has been appointed acting general safety agent during the illness of **J. F. Grodski.**

G. T. Cox, train dispatcher on the Freeport district of the Illinois Central, has been promoted to trainmaster of that district of the Wisconsin division, succeeding **G. S. Rought,** who retired from active service on November 1.

J. F. Riordan, supervising agent of the Wisconsin division of the Illinois Central, with headquarters at Freeport, Ill., has been promoted to superintendent of stations and transfers, with headquarters at Chicago, succeeding **C. G. Richmond,** deceased.

G. H. Bussing, general superintendent of the Mexico North Western, with headquarters at Cuidad Juarez, Chih., has also been appointed general superintendent of the Chihuahua and Mountain divisions of the Kansas City, Mexico & Orient. The title of **V. W. Bennett,** local manager of the Pacific division of the Orient, with headquarters at San Blas, Sin., has been changed to superintendent of that division and his headquarters have been removed to Los Mochis, Sin.

U. V. Mace, trainmaster of the Vermont division of the Rutland, has been appointed acting superintendent, with headquarters at Rutland, Vt., replacing **S. R. Kramer,** who has been granted a leave of absence. **L. E. Lockerby,** assistant trainmaster of the Vermont division will succeed Mr. Mace as trainmaster. He will in turn be replaced by **J. J. Hunt,** night chief train dispatcher. **W. E. Lovett** has been appointed to the latter position, succeeding Mr. Hunt.

Walter M. Boykin, who has been appointed superintendent of the Pensacola division of the Louisville & Nashville, with headquarters at Pensacola, Fla., was born on September 20, 1878, at Orange Hill, Fla. He entered the service of the Louisville & Nashville in October, 1897, as acting agent at Sneads, Fla. In September

of the following year he became clerk and transportation department timekeeper in the master of trains' office at Pensacola. From April, 1900, to February, 1901, Mr. Boykin was agent at Beatrice, Ala., and on the latter date he was transferred in the same position to Camden, Ala. In July, 1901, he was appointed third trick dispatcher and in January, 1902, he was again appointed agent at Camden. From December, 1902, to April, 1917, he was successively agent at River Junction, Fla., and Mobile, Ala., and on the latter date he was appointed master of trains of the Southern Alabama division. He held the latter position until November, 1917, when he was appointed assistant superintendent at Mobile, Ala., the position he held at the time of his recent appointment. Mr. Boykin's entire railroad service has been with the Louisville & Nashville.

Financial, Legal and Accounting

E. E. Bennett, assistant general attorney of the Los Angeles & Salt Lake in California, has been promoted to general attorney in that state, with headquarters as before at Los Angeles, Cal., succeeding **Fred E. Pettit, Jr.,** resigned.

Allen F. Free has been appointed auditor of disbursements of the St. Louis-San Francisco, with headquarters at St. Louis, Mo., succeeding **Everett R. Belt,** who has been promoted to assistant to the comptroller, in charge of valuation, with headquarters at the same point.

Traffic

Earl P. Russell, division freight agent on the Illinois Central at Jackson, Miss., has been promoted to general agent at the same point.

L. E. Ayer has been appointed general agent of the Canadian National, with headquarters at Philadelphia, succeeding **T. R. Chappel,** retired.

A. W. Miller, has been appointed general eastern passenger agent of the Baltimore & Ohio, with headquarters at New York, succeeding **J. B. Scott,** deceased.

F. T. Sturtevant, division freight agent on the Baltimore & Ohio at Youngstown, Ohio, has been promoted to assistant general freight agent, with headquarters at Cleveland, Ohio.

Joseph F. Wild has been appointed general agent, passenger department, of the Erie, with headquarters at Buffalo, N. Y., succeeding **Alfred Fynn,** promoted.

Alfred Fynn, general agent of the passenger department of the Erie at Buffalo, N. Y., has been promoted to assistant general passenger agent, with headquarters at Chicago.

J. C. Dawson, William J. Gemeiner, and **James A. Leary,** commercial agents of the Delaware, Lackawanna & Western, have been appointed general agents, with headquarters at Philadelphia, Pittsburgh and Boston, respectively.

E. T. Willson, city freight agent for the Chicago, Rock Island & Pacific at Colorado Springs, Colo., has been promoted to general agent of the freight department at that point, succeeding **P. L. McGue,** deceased.

H. A. Lawrence, district passenger agent of the Union Pacific at New York, and **A. J. Seitz** have been appointed general agents of the passenger and freight departments at New York, succeeding **J. B. DeFriest,** general agent of the freight and passenger departments, who will retire from active service on January 1.

J. H. Bauer, chief of the traffic bureau of the Cleveland, Cincinnati, Chicago & St. Louis, the Cincinnati Northern, the Evansville, Indianapolis & Terre Haute and the Peoria & Eastern, has been promoted to assistant general freight agent in charge of coal, coke and iron traffic, with headquarters as before at Cincinnati, Ohio. The jurisdiction of **W. L. Dewey,** assistant general freight agent at Cincinnati, has been changed to comprise rates and divisions and the rules and regulations governing the handling of freight traffic. **J. A. Keegan** has been appointed chief of the tariff bureau at Cincinnati, succeeding Mr. Bauer.

Ira H. Hubbel, who has been appointed assistant traffic manager of the New York Central, with headquarters at New York, was educated in the grammer schools of New York City. He entered railway service in May, 1883, as clerk in the general freight office of the New York, West Shore & Buffalo (West Shore). In February, 1891, he was appointed chief clerk to the freight claim agent and in July, 1898, he was appointed to a similar position in the general freight agent's office. He was promoted to the position of division freight agent at New York, on January 1, 1901, and three years later he was appointed second assistant general freight agent, in the same city. He was advanced to first assistant general freight agent in October, 1906, and the following year he became general freight agent, with the same headquarters. Mr. Hubbel was appointed assistant freight traffic manager in March, 1914, and in January, 1925, he was promoted to the position of freight traffic manager, the position he held at the time of his recent promotion to assistant traffic manager at New York.

M. R. Garrison, who has been appointed general freight agent of the New York Central, with headquarters at New York, was born on November 18, 1888, at Haverstraw, N. Y. He was educated at Haverstraw high school and entered the service of the West Shore as stenographer in May, 1906. In April, 1909, he became stenographer in the office of the general freight agent of the New York Central. He was appointed chief clerk to the assistant general freight agent in June, 1915, and in February, 1918, he was assigned to the office of the regional director, United States Railroad Administration, later becoming office assistant to the traffic assistant, Eastern Region. He became chief clerk to the traffic manager of the New York Central at the end of federal control and in December, 1923, was appointed chief of the tariff bureau. He was appointed assistant general freight agent in December, 1926, the position he held at the time of his recent promotion.

David E. Gelatt, who has been appointed freight traffic manager of the New York Central, with headquarters at New York, was born on January 15, 1873, at Susquehanna, Pa. He entered the service of the New York Central as stenographer in the office of the general eastern passenger agent in May, 1893, and in October of the same year he became clerk in the general freight office at New York. He was advanced to the position of chief clerk to the general freight agent in 1904, and the

David E. Gelatt

following year he was appointed traveling freight agent. In October, 1906, Mr. Gelatt became division freight agent at New York and in May, 1907, he was appointed second assistant general freight agent at the same point. He was advanced to first assistant general freight agent in January, 1910, and in March, 1920, he was further advanced to general freight agent. Mr. Gelatt was appointed general coal freight agent in December, 1923, and in January, 1925, he was appointed assistant freight traffic manager, the position he held at the time of his recent promotion to freight traffic manager.

George H. Clark, who has been appointed assistant freight traffic manager of the New York Central, with headquarters at New York, was born in Brooklyn, N. Y., in 1878. He entered the traffic department of the New York Central

in 1900, and four years later was appointed contracting freight agent at New York. On March 15, 1905, Mr. Clark was appointed chief clerk to the general eastern freight agent and on November 1, 1912, he became general freight and passenger agent of the Ottawa & New York (New York Central) and division freight and passenger agent of the New York Central, with headquarters at Ottawa, Ont. When the Ottawa & New York was taken over by the New York Central, in 1916, Mr. Clark continued to act as division freight and passenger agent. In January, 1922, he was appointed division freight agent for the New York Central at New York and in December, 1923, he became assistant general freight agent at the same point. He was appointed assistant to the traffic manager, with the same headquarters, in December, 1927, and in January, 1929, he was advanced to the position of general freight agent, the position he held at the time of his recent promotion.

Engineering, Maintenance of Way and Signaling

J. R. Higgins has been appointed valuation engineer of the Western lines of the Atchison, Topeka & Santa Fe, with headquarters at Amarillo, Tex.

W. R. Varnum has been appointed assistant division engineer on the Coast lines of the Atchinson, Topeka & Santa Fe at Needles, Cal. **R. D. Pierson** has been appointed assistant division engineer at Fresno, Cal.

E. Betts, assistant engineer of standards of the Southern Pacific, has been appointed inspection engineer, with headquarters as before at San Francisco, Cal. Mr. Betts will have charge of the inspection of new material and new equipment in addition to other duties to which he may be assigned.

M. H. Long, division engineer of the St. Louis-Kansas City division of the Chicago, Rock Island & Pacific, with headquarters at Kansas City, Mo., has been transferred to the Kansas division, with headquarters at Herington, Kan. **J. T. Fitzgerald** has been appointed division engineer of the St. Louis-Kansas City division, succeeding Mr. Long.

Mechanical

Taber Hamilton, general agent and superintendent of the Grand Rapids division of the Pennsylvania, with headquarters at Grand Rapids, Mich., has been appointed engineer of motive power in the office of the chief engineer of motive power, with headquarters at Philadelphia, Pa.

A. Mihleisen has been appointed general inspector of boilers of the Atchison, Topeka & Santa Fe, with headquarters at Topeka, Kan., succeeding **George Austin,** who has retired from active duty after 54 years of railway service, 27 of which were with the Santa Fe. Mr. Austin had been general boiler inspector since 1906.

Claude M. Starke, master mechanic of the Kentucky division of the Illinois Central, with headquarters at Paducah Ky., has been transferred to the Chicago Terminal division at Chicago. The jurisdiction of **L. H. Kuhn,** master mechanic of the Tennessee division at Jackson, Tenn., has been extended to include the Kentucky division.

Charles W. Esch, who has been promoted to mechanical engineer of the Chicago & Alton, with headquarters at Bloomington, Ill., has been connected with the mechanical departments of various railways in the West for about 14 years. He was born at Peru, Ind., on January 26, 1901, and graduated from the Decatur (Ill.) high school in 1918. Later Mr. Esch attended James Millikin University and during high school vacations he was engaged by the Wabash at Decatur as a boiler maker's helper, as

Charles W. Esch

a machinist's helper and as an A. R. A. clerk in the car department. Following a year in a college engineering course he entered the drawing room of the mechanical department of the Wabash as a draftsman in 1920. Four years later he became a locomotive draftsman on the Union Pacific and in 1925 he was employed in a similar capacity by the Texas & Pacific, where he also conducted tests on forced drafts for locomotives. Mr. Esch entered the service of the Chicago & Alton as chief draftsman in the mechanical department at Bloomington in 1926, a position he held until his recent promotion to mechanical engineer.

Obituary

William M. Whitenton, former vice-president in charge of operation of the Missouri-Kansas-Texas and general manager of the Chicago, Rock Island & Pacific, died at Dallas, Tex., on December 10, at the age of 62 years. Mr. Whitenton retired from active railway service as assistant vice-president of the Midland Valley and the Kansas, Oklahoma & Gulf, on October 1.

Edmund Wragge, formerly chief engineer of the Toronto & Nipissing, now part of the Canadian National, and the Toronto, Grey & Bruce, now part of the Canadian Pacific, and general manager of the latter road, died at Toronto, Ont., on November 26, at the age of 92 years. Mr. Wragge, who was born in England, had been an engineering officer on railways in Africa and England before coming to Canada in 1869, when he was appointed chief engineer of the Toronto & Nipissing. When he left the Toronto, Grey & Bruce as its general manager in 1883, he served for the next 10 years as local manager of the Grand Trunk at Toronto.

Fred Price, chief of car service of the Canadian National, who died early in December in Chicago while attending the meetings of the American Railway Association in that city, was born in Montreal on June 11, 1864. He had been in railway service for approximately half a century, having entered the service of the Grand Trunk at Montreal as clerk in the audit department in 1879. He was appointed telegraph messenger later in the same year and in 1881 he became operator. From that time until 1923, Mr. Price occupied various positions in Montreal, Belleville and London, Ont., including that of chief clerk in the general superintend-

Fred Price

ent's office and in the car service department, master of transportation of the Southwestern Ontario division at London, Ont., and superintendent of car service at Montreal. In 1923 he was appointed chief of car service, the position he held at the time of his death. Mr. Price was taken ill with pneumonia while in Chicago as the representative of Sir Henry W. Thornton, chairman and president of the Canadian National at the meetings of the Railway Executives' Association. He was also acting as representative of Mr. S. J. Hungerford, vice-president in charge of operation at the annual meetings of the American Railway Association.